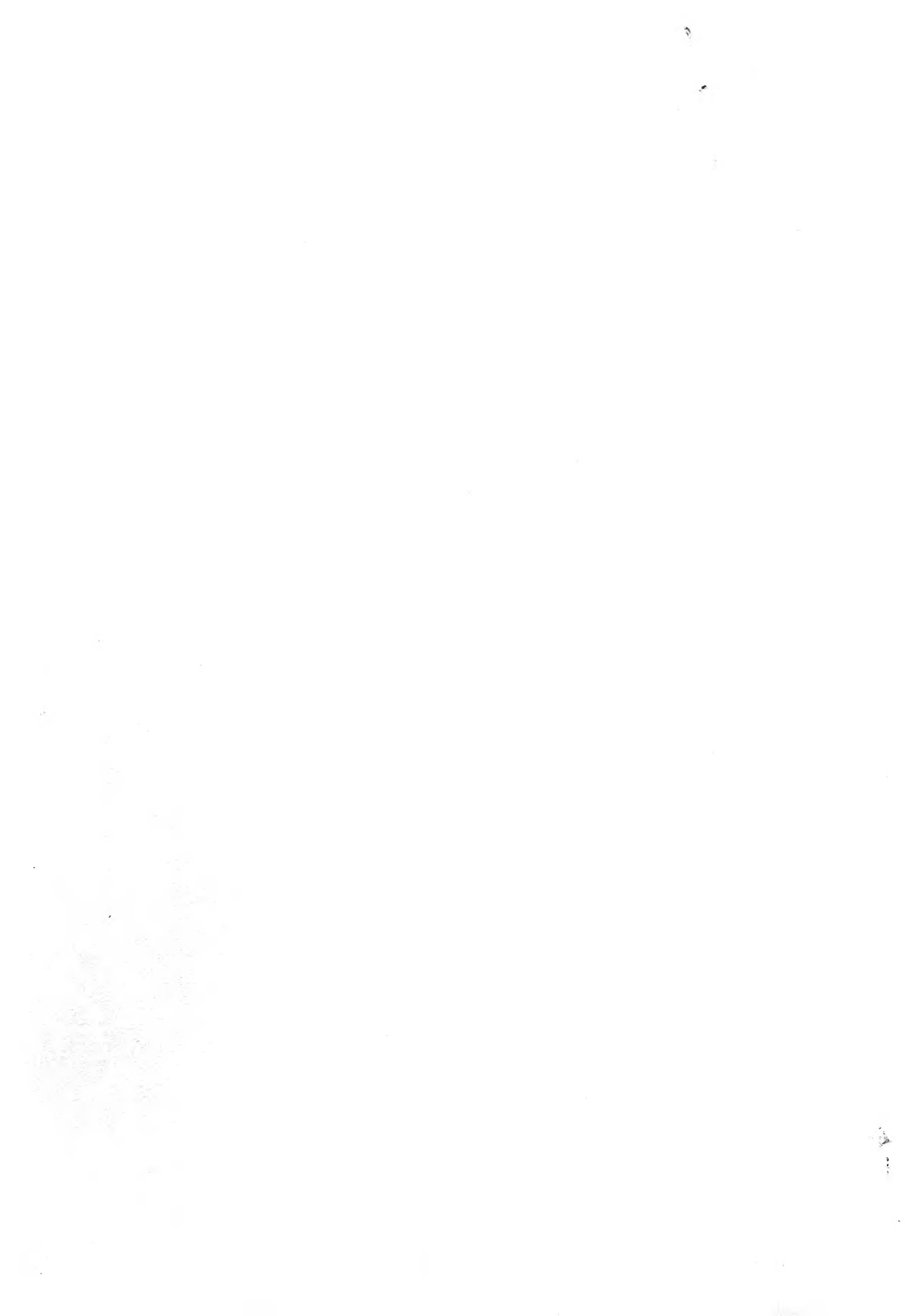


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# Idaho's Forests, 1991

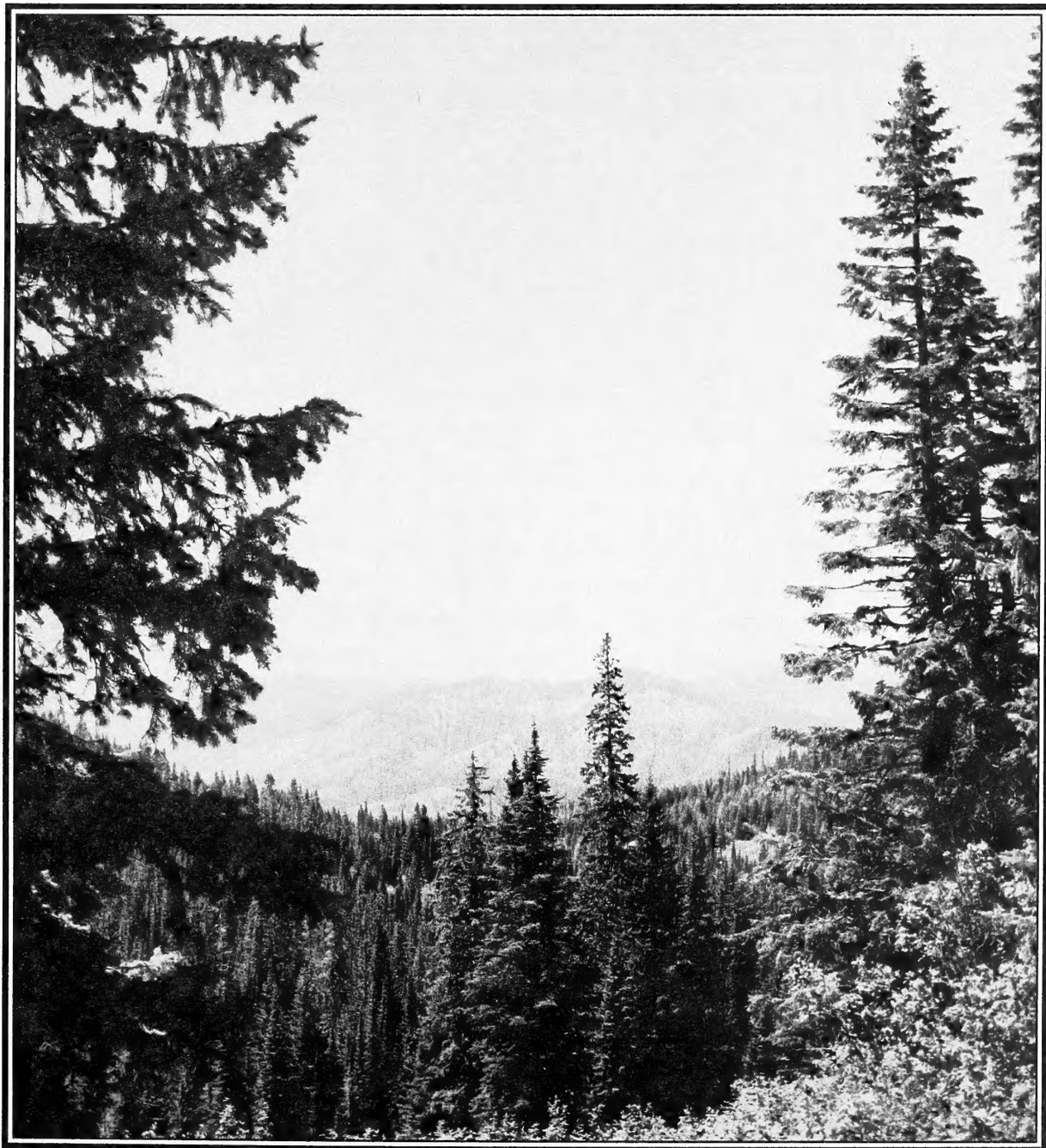
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Mark J. Brown  
David C. Chojnacky



## The Authors

**Mark J. Brown** is a Resource Analyst in the Forest Inventory and Analysis Project at the Southern Research Station in Asheville, NC 28802. He holds a Masters degree in forestry from Clemson University.

**David C. Chojnacky** is a Research Forester in the Interior West Resource Inventory, Monitoring, and Evaluation Program at the Intermountain Research Station in Ogden, UT 84401. He holds a Ph.D. degree in forest biometry from Colorado State University.

## Research Summary

This report presents the results of the 1990-1991 inventory of Idaho's forest lands, and includes discussions of forest land area, tree numbers, wood volume, annual mortality, net growth, and removals. Most information is organized by ownership, stand, and tree classification variables. The report also explains inventory terminology and inventory design and discusses data reliability.

Results show there are more than 22 million acres of forest land in Idaho. About 96 percent of this area is covered by timberland forest types (predominantly Douglas-fir), and 4 percent is covered by woodland types (predominantly juniper). Nearly 85 percent of the forests are administered by government agencies. About 17 percent of the forests are reserved from being utilized for wood products. Most of the nonreserved forests (17.6 million acres) are classified as timberland. Net volume on this timberland is almost 40 billion cubic feet of wood. Douglas-fir, grand fir, and lodgepole pine species account for most of the timberland volume. The timberland mortality averaged 290 million cubic feet annually. As a result, net growth averaged 816 million cubic feet annually (46.3 cubic feet per acre per year). Removals totaled 390 million cubic feet in 1990. True firs and Douglas-fir made up close to half of the volume removed.

## Preface

Statewide forest inventories are part of an ongoing, nationwide effort of the Forest Service, U.S. Department of Agriculture, to assess the Nation's forest lands. Forest Inventory and Analysis (FIA), a subgroup within Forest Service Research, is responsible for this task. It uses periodic, State-by-State, sample-based inventories. FIA was initially authorized by the McSweeney-McNary Act of 1928. The current authorization is through the Renewable Resources Research Act of 1978.

In the Western States of Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, and Wyoming, FIA inventories are conducted by the Interior West Resource Inventory, Monitoring, and Evaluation Program at the Intermountain Research Station in Ogden, UT. These inventories provide data on land area and wood volume that can be classified for many resource uses. Most of these inventories cover State, privately owned, and other forest lands not in the National Forest System. The data, when combined with similar information on National Forest lands, provide an extensive database for forest lands. This 1991 inventory of Idaho incorporates information from National Forest System lands to provide a comprehensive database for the State's forests.

## Acknowledgments

The authors gratefully acknowledge the cooperation and assistance from Idaho's State Forester and other Idaho Department of Lands personnel; the Bureau of Land Management and Indian Affairs, U.S. Department of the Interior; and the Intermountain Region, Forest Service, U.S. Department of Agriculture. We also appreciate the assistance provided by the Intermountain Forest Industry Association and thank the private landowners who provided information and access to field sample plots.

# Highlights

## Area

- Forests cover 22.3 of the 53.5 million acres within Idaho's boundaries.
- Most forests, 21.4 million acres, are classified as timberland. The remaining 0.9 million acres are classed as woodland.
- A substantial portion of the timberland, 3.8 million acres, is reserved.
- National Forests account for 73 percent (12.8 million acres) of the nonreserved timberland and nearly 99 percent of the reserved timberland.
- Douglas-fir is the predominant forest type on the nonreserved timberlands, occupying 6.1 million acres. Lodgepole pine is next with 2.5 million acres. Lodgepole, ponderosa, and western white pine types have decreased in area.
- Stands classified as sawtimber size comprise 70 percent (12.3 million acres) of Idaho's nonreserved timberlands.
- Woodland is primarily found in southern Idaho, where juniper is the predominant species.

## Volume

- Idaho's nonreserved timberlands contain almost 40 billion cubic feet of wood in growing-stock trees, including 143 billion board feet of sawtimber (Scribner rule).
- National Forests contain 76 percent of the cubic-foot volume and 77 percent of the board-foot volume (Scribner rule).
- Douglas-fir forest type contains one-third of Idaho's growing-stock volume. The Douglas-fir species individually accounts for 31 percent of the volume.

- Just over one-half (51 percent) of the total cubic-foot volume is in trees less than 15 inches diameter at breast height (d.b.h.).

## Mortality

- Annual mortality of growing stock totaled 290 million cubic feet. Over three-fourths (76 percent) of the mortality occurred on National Forests.
- Douglas-fir accounted for 22 percent of mortality, followed by subalpine fir with 17 percent.
- Insects were responsible for 31 percent of the growing-stock mortality and were the leading identifiable cause of death.

## Growth

- Net annual growth of growing stock averaged 816 million cubic feet.
- Douglas-fir provided 31 percent of the growth, followed by grand fir with 21 percent. Lodgepole pine accounted for 14 percent.
- Overall, net growth of growing stock on timberland averaged 46.3 cubic feet per acre per year.

## Removals

- About 309 million cubic feet of growing-stock volume were harvested in 1990, including 1,584 million board feet (Scribner rule).
- Sawlogs accounted for 75 percent of growing-stock removals. Veneer logs were second with 8 percent.
- True firs made up 24 percent of the growing-stock volume removed, and Douglas-fir made up another 22 percent.



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# Idaho's Forests, 1991

Mark J. Brown  
David C. Chojnacky

## Introduction

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This resource bulletin summarizes Statewide findings of the latest forest inventory of Idaho and covers all major ownership groups. It combines data recently reported for land outside National Forests in northern Idaho (Wilson and Van Hooser 1993) and southern Idaho (Chojnacky 1995) with data from National Forests provided by the Intermountain and Northern Regions of the National Forest System (NFS). The inventory of lands outside National Forests was performed by the Intermountain Research Station Interior West Resource Inventory, Monitoring, and Evaluation (IWRIME) Program as part of its Forest Inventory and Analysis (FIA) activity. Data for timberland acres were collected between 1990 and 1991; woodland data were collected during the 1981 survey. Data collection dates for NFS lands varied by individual forest, ranging from 1974 to 1993, with most forests sampled in the 1980's and 1990's.

Comparisons to 1980 NFS statistics previously reported for Idaho (Benson and others 1987) should be restricted to area figures. Methods for obtaining area data are fairly consistent over time, but volume estimation can vary due to field sample selection, data collection, and data processing methods. Historic data collection ignored lands producing less than 20 cubic feet per acre per year; now all nonreserved lands are sampled. Previous volume estimates from NFS lands were not derived in the same manner as current volume figures; therefore, direct comparisons should be avoided. Greater efforts were taken to ensure the accuracy of current volume data considering the constraints of blending NFS and FIA sample data. The current volume data are believed to portray the most accurate assessment of Idaho's timber volume available to date.

This report describes Idaho's forest resources by area, ownership, forest type, volume, growth, removals, and mortality (tables 1-43). Woodland, forest land where timber species make up less than 10 percent stocking, provides important wildlife habitat but constitutes only a small part of the State's forest resources and contains even less of the timber resource. Therefore, the primary focus of the report is on timberland; woodland is addressed only briefly. Tabular information including woodland is found only in tables 1, 3, and 4.

Timberland is forest land where timber species make up at least 10 percent stocking. After the initial discussion by area and table 1, the report focuses on nonreserved timberland. Nonreserved timberland is timberland not withdrawn from tree utilization. From that point on, the terms timberland and nonreserved timberland are used synonymously, with nonreserved used intermittently for emphasis. The findings are initially highlighted, then shown graphically and explained in more detail through text. A broad scale

map of forest resource occurrence and type distribution is included. Inventory procedures and standard forest survey terminology follow. Last, 43 supplemental tables are included as a further source for statistics presented in the text and for those readers interested in pursuing individual analysis. In general, these tables describe timberland by tree, stand, ownership, and volume related variables.

## Area

Idaho's boundaries encompass 53.5 million acres (table 1). About 22.3 million acres, or 42 percent of the State, are forested to some degree (fig. 1). Most of the forests, 21.4 million acres, are at least 10 percent stocked with tree species traditionally used for industrial wood products and are classified as timberland. The remaining forests, 0.9 million acres, while stocked with such species as Rocky Mountain juniper (*Juniperus scopulorum*) and curleaf mountain-mahogany (*Cercocarpus ledifolius*), lack sufficient stocking of timber species to be included in the timberland base and are classified as woodland.

Legislation has reserved nearly 4.3 million acres, or 8 percent, of the land area in Idaho. These reserved lands are composed of 3.8 million acres of timberland, 0.5 million acres of nonforest land, and a trace of woodland. Just 1 percent of the State's woodland and just over 1 percent of its nonforest land are reserved, but 18 percent of its timberland is set aside. Lands administered by NFS, primarily those in the Wilderness System, account for 93 percent of reserved areas. The remainder consists of National Park, National Monument, miscellaneous Federal, State, and other areas protected for their unique aesthetics, history, or recreational value.

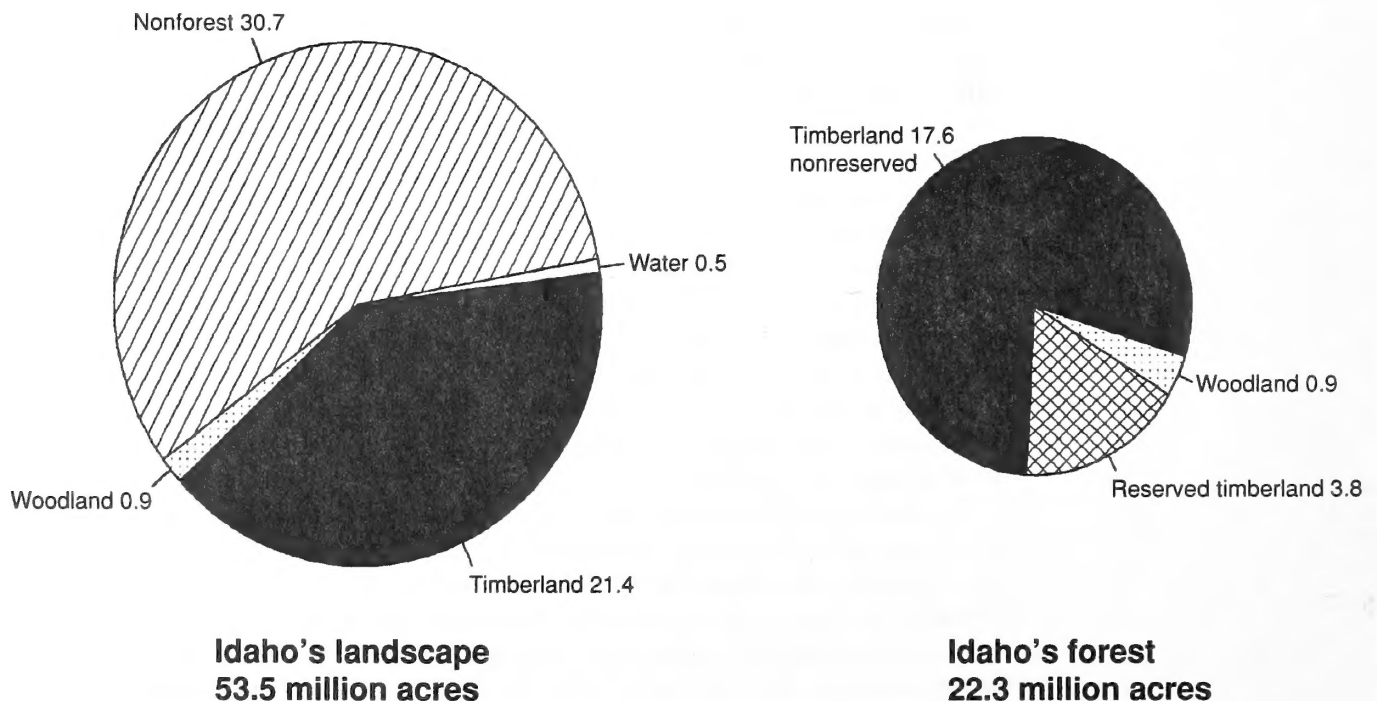


Figure 1—Area within Idaho's boundaries by land class and portion that is forest by class of forest, 1991.

Area of reserved timberland increased from 2.5 million acres in 1980 to 3.8 million acres in 1991. Most of the increase came from timberland reported in a deferred status in 1980, which was under consideration for protection.

Discounting the reserved timberland leaves 17.6 million acres of timberland available for multiple uses, including timber production. These are the acres described in the remainder of this report. The 17.6 million acres of timberland in Idaho remained fairly stable, declining less than 0.5 percent since 1980.

## Ownership

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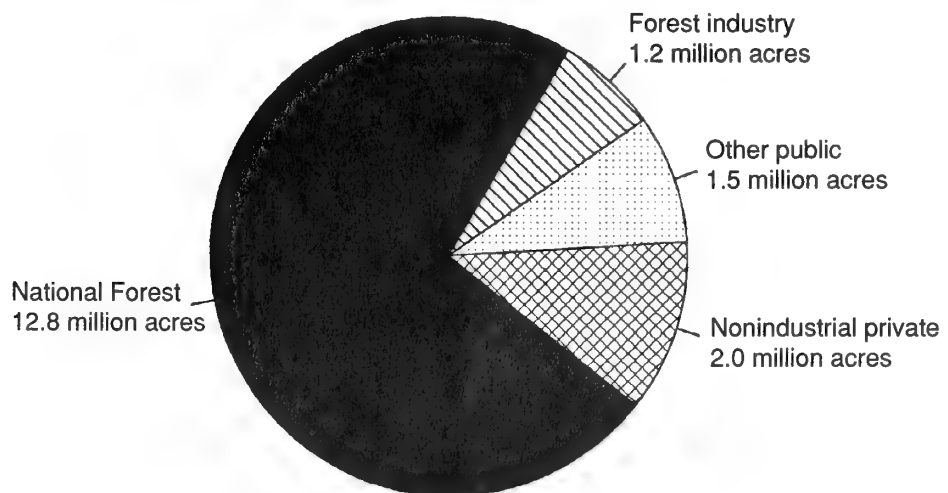
Nearly 12.8 million acres, or 73 percent, of Idaho's timberland are under NFS management. The balance consists of 1.5 million acres administered by other public agencies, 2.0 million acres in nonindustrial private forest (NIPF) ownerships, and 1.2 million acres owned by forest industry (fig. 2).

Because such a large percentage of Idaho's timberlands are under NFS ownership, descriptions of the resource tend to follow patterns existing on the NFS timberlands. Therefore, when differences do exist, they are particularly noteworthy.

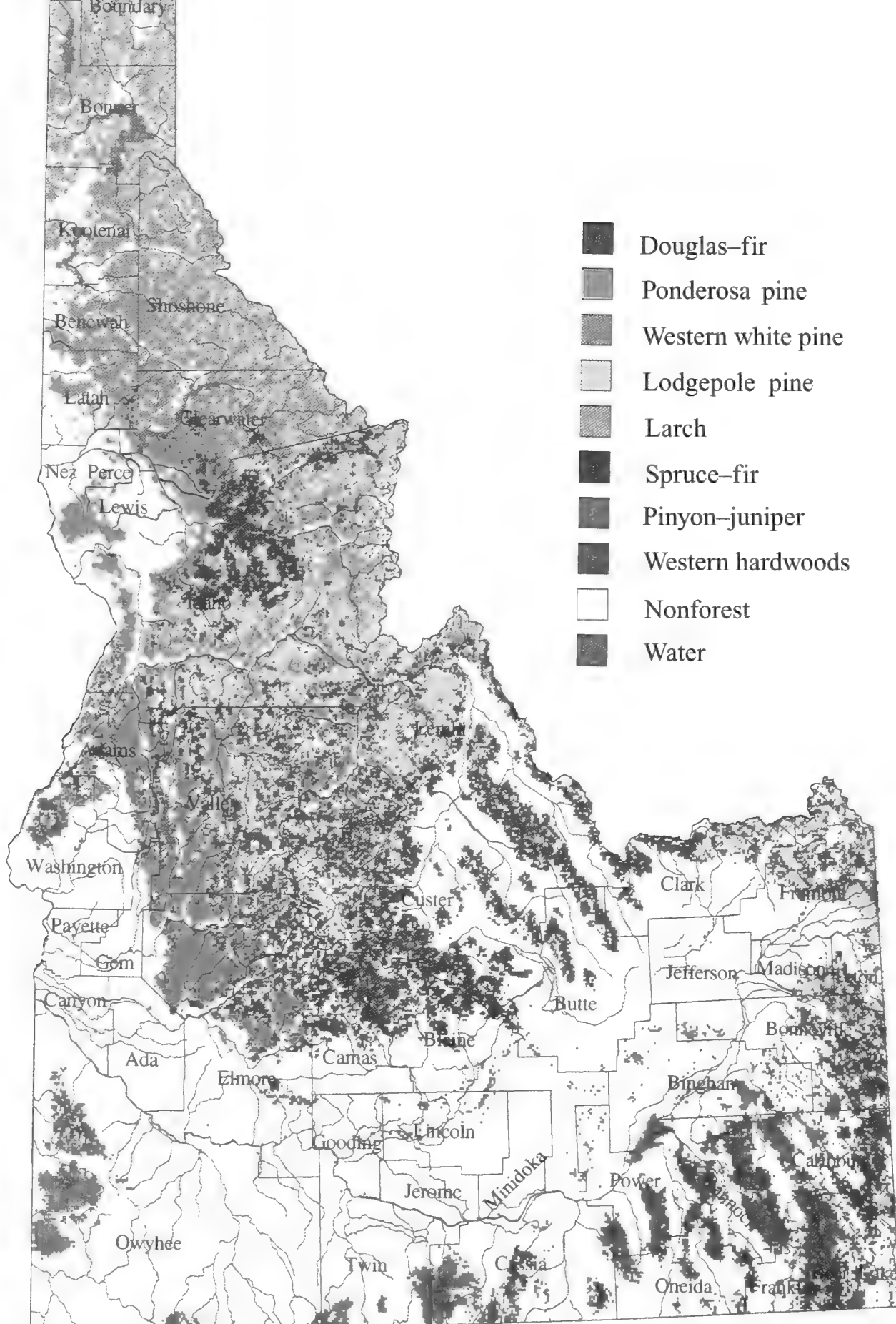
## Type

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Climatic patterns, aspect, and elevation govern the occurrence and distribution of forest cover types in Idaho, as shown in figure 3 (Zhu and Evans 1994). This type map is based on interpretations of satellite imagery, not ground samples. Nevertheless, it provides a broad picture of Idaho's forest type distributions. Natural events like catastrophic fire or severe weather, as well as human-induced disturbances like logging or animal grazing, can influence the succession and development of timberland areas (Cooper and others 1987; Steele and others 1981). Forest type classifications that are determined by species composition are convenient descriptors of forested areas. In some instances, types are largely pure stands of a single species.



**Figure 2**—Area of Idaho's nonreserved timberland by ownership category, 1991.



**Figure 3**—General distribution of major forest types in Idaho, 1991.

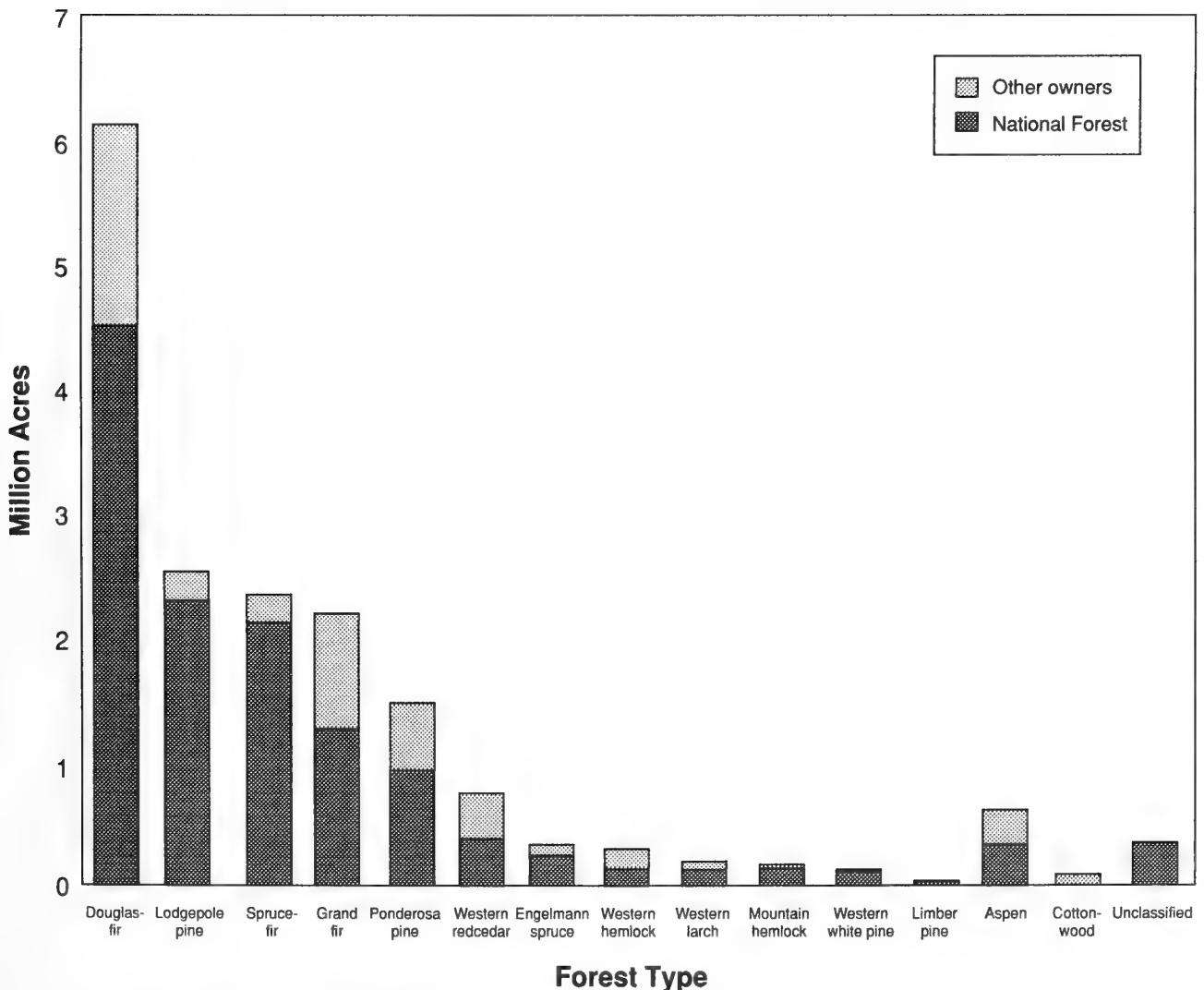
More often, however, types are composed of several species and named for the one representing a plurality of the stocking.

The Douglas-fir type covers the largest area with 6.1 million acres, or 35 percent, of the State's timberland (fig. 4). Second is lodgepole pine with 2.5 million acres, or 14 percent of the timberland. Next in abundance is true spruce-fir, a combination of Engelmann spruce and subalpine fir, with almost 2.4 million acres. Grand fir accounts for 2.2 million acres, and ponderosa pine type has 1.5 million acres.

The majority of the area in most forest types is on NFS lands. The exceptions are western hemlock, western redcedar, and the hardwood types combined, each with half or less of their acreage on NFS lands.

Except for the amount of timberland shifted into a reserved status over the last 4 decades, area of timberland in Idaho has changed relatively little. However, these changes in land status, along with harvest history, have altered the forest type composition of Idaho.

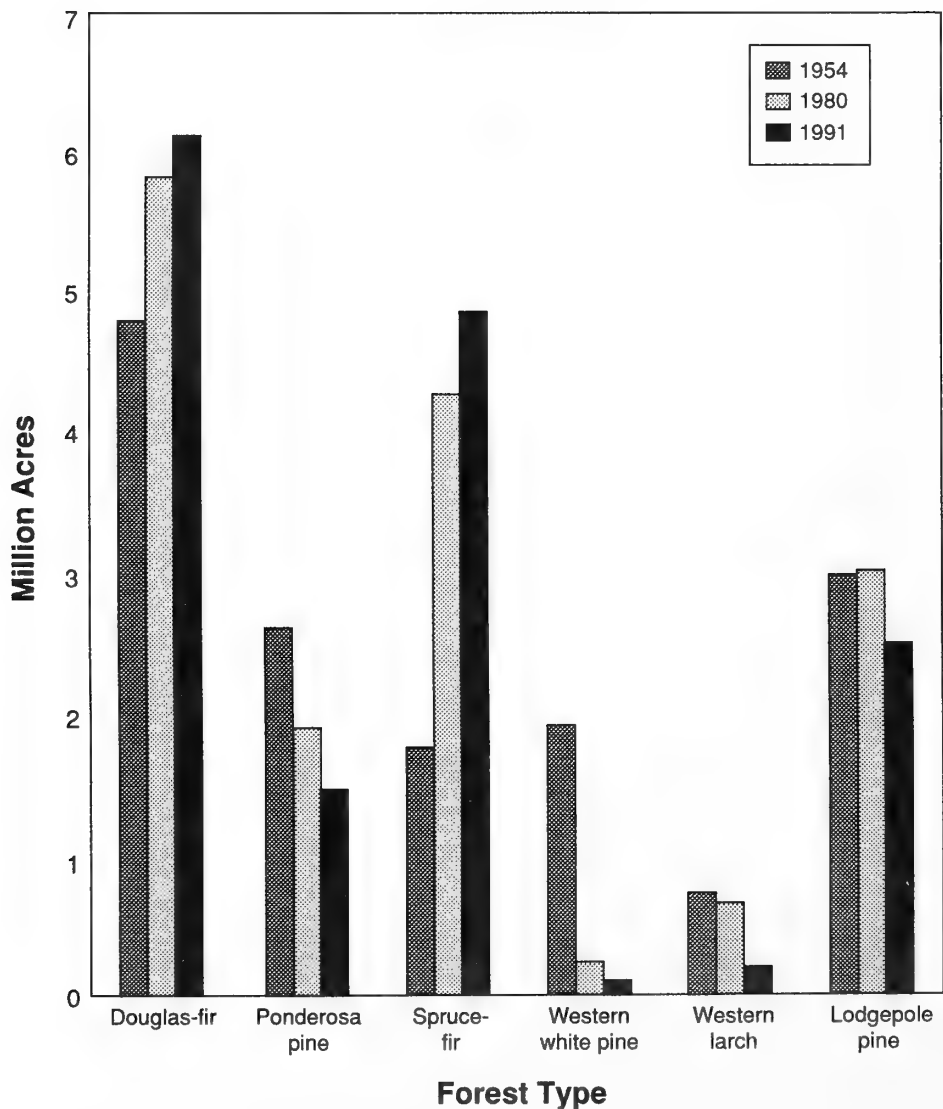
Since the 1954 forest survey data (Wilson 1962) were released, the acreages of some forest types have decreased significantly while others have increased. Proportionately, western white pine decreased the most in area,



**Figure 4**—Area of nonreserved timberland by forest type and ownership group, Idaho, 1991.

dropping by 93 percent since 1954 to just 130,000 acres (fig. 5). Western larch declined by 72 percent to barely 200,000 acres and ponderosa pine dropped 44 percent to less than 1.5 million acres. Lodgepole pine type also was down 16 percent to 2.5 million acres. In contrast, spruce-fir (in this case a combination of Engelmann spruce, subalpine fir, and grand fir) increased by 177 percent to nearly 4.9 million acres. Douglas-fir, the most prevalent type throughout the period, rose by 28 percent to 6.1 million acres. In 1954, Douglas-fir was followed by lodgepole pine and then ponderosa pine in order of abundance. Today, spruce-fir is second and lodgepole pine is third.

These trends by forest type are corroborated by cutting history, impacts of disease and insects, and fire management policies. High-value species like western white pine and ponderosa pine are highly sought after and cutting has greatly reduced the area they once occupied. Past outbreaks of white pine blister rust and mountain pine beetle have taken their toll on pine species as well. Concurrently, the preclusion and suppression of fires has permitted spruce-fir to flourish.

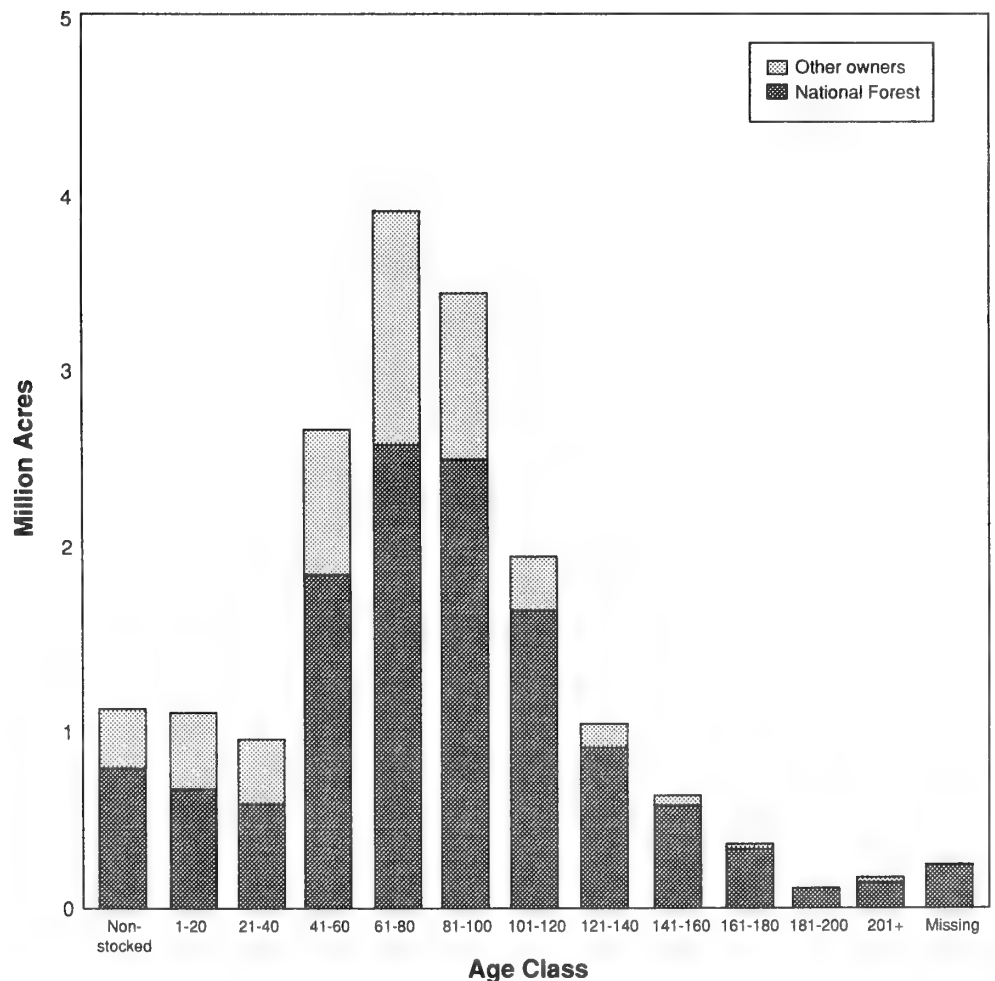


**Figure 5**—Area trends of selected forest types in Idaho from 1954 to 1991.

Forest stand age and size, although related, are not necessarily correlated. Growth rates often differ among species, and site productivity can vary by locale. Nevertheless, stand age and size can be used to depict the overall structure of Idaho's timberland.

Generally, stand age is normally developed from a representative diameter class distribution of individual growing-stock tree ages collected at each sample location. Over two-thirds of Idaho's timberland are in stands estimated to be between 40 and 120 years old (fig. 6). The median age of all stands is 81 years old. The area of stands less than 40 years old accounts for just 11 percent of the timberland. The acreage of timberland beyond 120 years old drops rapidly. Only 286,000 acres of timberland are more than 180 years old, and they make up less than 2 percent of total timberland.

Up to 100 years of age, stand age distributions are initially similar across ownerships. Above 100 years of age, however, more of the stands occur on NFS lands than on other ownerships. Of the stands over 100 years old, 86 percent occur on NFS lands, but only 68 percent of the stands less than 100 years old are on NFS lands. The median age of NFS stands is more than



**Figure 6**—Area of nonreserved timberland by age class and ownership group, Idaho, 1991. A nominal amount of NFS land lacked these data and was classified as missing.

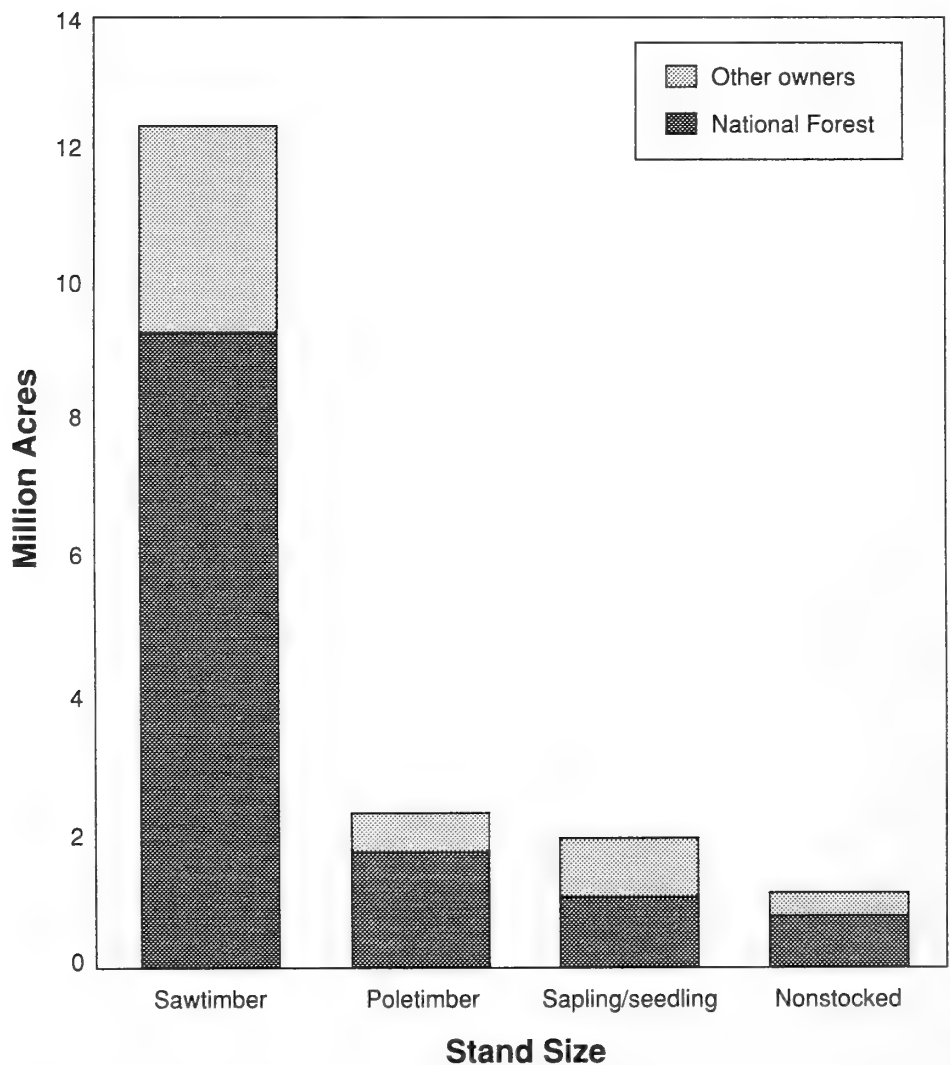


85 years old; the median age of stands on other ownerships is 69 years old. This difference is a result of an older resource and longer rotations on NFS lands along with heavier utilization and shorter rotations of stands on other ownerships.

The age structure and ownership patterns for the major forest types generally resemble those that exist for all timberland. Deviations include: an older median age of 91 years for spruce-fir types; lodgepole pine types over 100 years old are mostly on NFS lands; and the amount of ponderosa pine stands older than 100 years pales in comparison to the amount of ponderosa stands in younger age brackets.

## Size

Stand-size classes, like forest types, are also determined by stocking. Stands classed as sawtimber size predominate on 70 percent of the timberland in Idaho (fig. 7). Poletimber-size stands make up another 13 percent, sapling/seedling-size stands 11 percent, and nonstocked stands 6 percent.



**Figure 7**—Area of nonreserved timberland by stand-size class and ownership group, Idaho, 1991.



National Forest System lands account for at least three-fourths of the sawtimber and poletimber stand classifications, more than half of the sapling/seedling stands, and over two-thirds of the nonstocked areas.

Most individual forest types are dominated by stands classed as sawtimber size as well (table 5). Engelmann spruce, mountain hemlock, and Douglas-fir exceed the average in amount of stands classified as sawtimber with 91, 88, and 83 percent, respectively. Only 23 percent of western white pine stands are classed as sawtimber, a result of past outbreaks of white pine blister rust and past harvests focusing on western white pine (*Pinus monticola*). Aspen is even lower with just 13 percent of stands classified as sawtimber size.

Among the softwood types, lodgepole pine has the highest proportion of stands classified as poletimber with 41 percent. Among the hardwoods, aspen has the highest proportion; 50 percent of aspen stands are classed as poletimber.

The highest proportion of stands by type classed as sapling/seedling occur in western white pine with 39 percent, followed closely by aspen with 32 percent.

With the exception of cottonwood, which occurs almost completely on other ownerships, NFS lands contain the majority of stands classified as sawtimber size for each forest type (table 6). The percentage of NFS lands in stands classed as sawtimber size ranges from a low of just over 50 for aspen, western hemlock, and western redcedar to a high of 90 percent or better for lodgepole pine, spruce-fir, and limber pine types.

## Numbers of Trees

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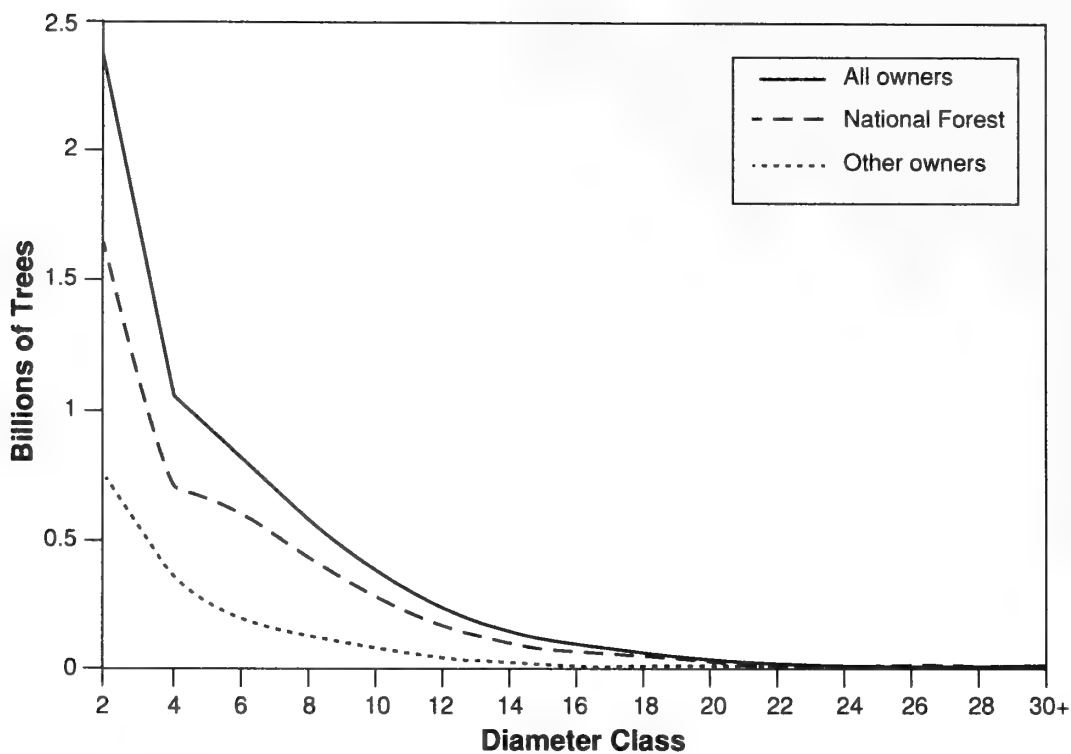
Stand age and size classifications provide a picture of how Idaho's timberland appears. But an analysis of just the tree population along with the density of occurrence (stocking) may be more useful. The tree population numbers are cumulative and disregard stand or landscape distribution.

Tree class designations were determined while sampling the standing tree population. Approximately 4 percent of standing trees were classified as salvable dead. A fraction of 1 percent were found to be rotten culls, and 1 percent were determined to be culls due to rough form (table 13). Ninety-five percent met growing-stock requirements (table 12).

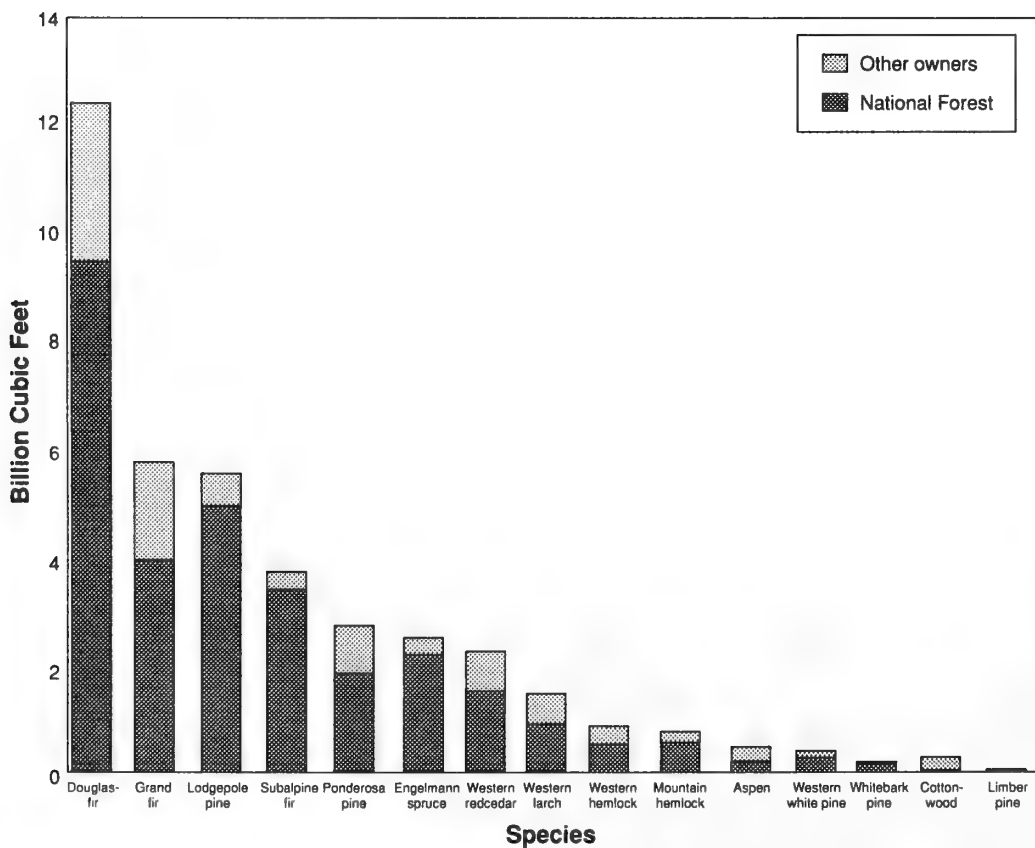
In terms of sheer numbers, 58 percent of growing-stock trees are less than 5 inches in diameter. Trees of poletimber-size diameters account for 24 percent of stems in the inventory. Trees of sawtimber-size diameters make up 18 percent of the growing-stock stems.

Subalpine fir (*Abies lasiocarpa*) accounted for the highest number of growing-stock trees below 5 inches in diameter, followed by lodgepole pine (*Pinus contorta*) and Douglas-fir (*Pseudotsuga menziesii*) (table 12). In poletimber-size diameters, lodgepole pine dominated tree numbers, followed by Douglas-fir and subalpine fir. For trees of sawtimber-size diameters, Douglas-fir was the predominant species followed by lodgepole pine and grand fir (*Abies grandis*).

The pattern of growing-stock tree distribution by diameter class, for the most part, is similar on NFS and other ownerships. The most notable difference is the higher proportion of stems between 5 and 9 inches on NFS lands than on other ownerships (fig. 8). The facts that lodgepole pine dominates tree numbers between 5 and 9 inches and that the majority of lodgepole pine exists on NFS lands (fig. 9) are the reasons.



**Figure 8**—Numbers of trees on nonreserved timberland by diameter class and ownership group, Idaho, 1991.



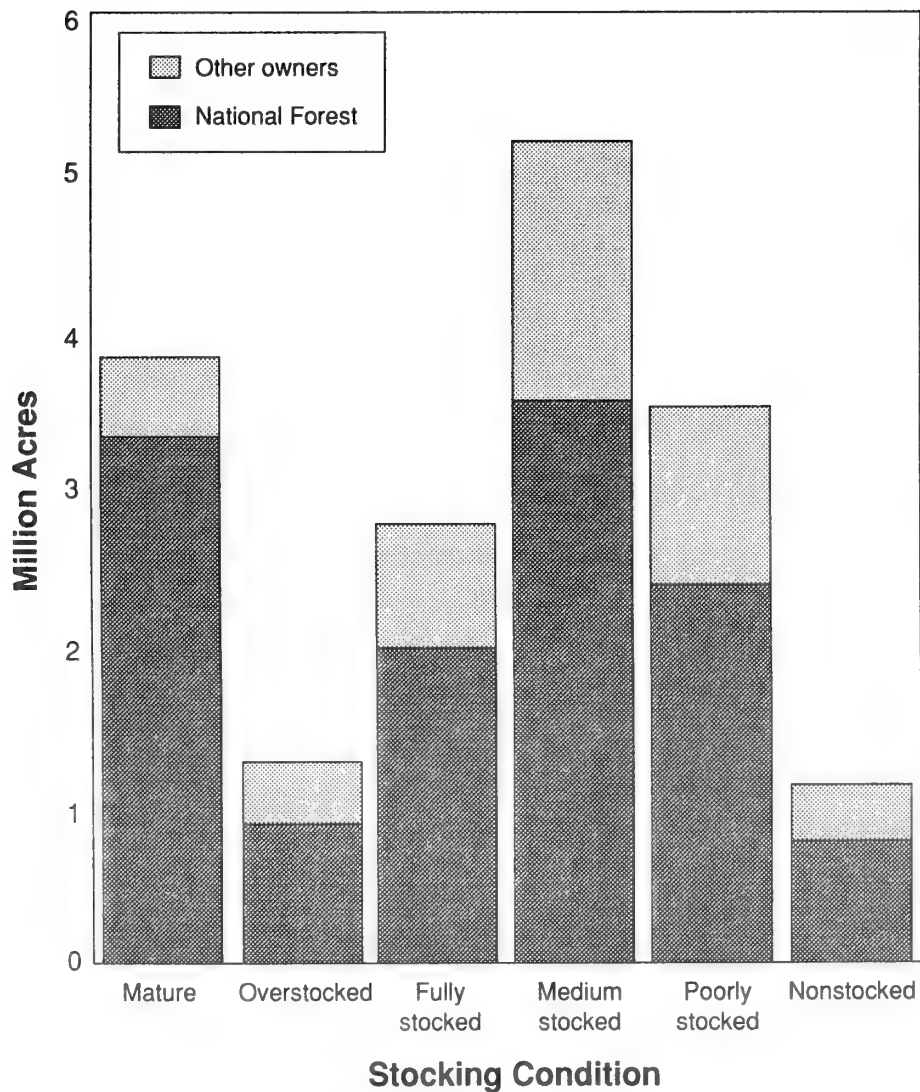
**Figure 9**—Volume of growing-stock trees on nonreserved timberland by species and ownership group, Idaho, 1991.

The term stocking alludes to the degree that growing space is utilized by trees. Categories used to describe this concept range from nonstocked, where sites are less than 10 percent stocked with growing-stock trees, to overstocked, where sites exceed 60 percent stocking with growing-stock trees.

In Idaho, medium-stocked stands account for the largest portion (29 percent) of timberland area (fig. 10). Poorly stocked and nonstocked areas together account for the next largest portion (26 percent) of the timberland.

Stands of lodgepole pine are the most frequently encountered in overstocked and fully stocked conditions (table 11). All other categories of stocking are dominated by Douglas-fir. However, ponderosa pine type occupies the second highest proportion of the poorly stocked and nonstocked areas. Such sparse conditions must befit this type, since more than half of the ponderosa pine stands are poorly stocked or nonstocked.

Stands categorized as stocked with mature trees are those over 100 years old. National Forest System lands have a higher percentage of mature stands than any of the other stocking categories.



**Figure 10**—Area of nonreserved timberland by stocking condition category and ownership group, Idaho, 1991.

Volume is another way to quantify the resource. By calculating the quantity of wood volume in trees, volume is used to measure the resource in terms of total inventory, mortality, net growth, and removals. On timberland, wood volume is calculated for trees 5 inches d.b.h. and larger using merchantability standards of a 1 foot stump and a 4 inch top diameter.

The inventory volume of growing stock in Idaho totals 39.6 billion cubic feet and includes 142.5 billion board feet of sawtimber (Scribner rule). This volume can be expressed in different formats, either by forest type or species. Expressions by forest type include the volume of all species present in a particular type classification. Amount by species, however, is an accumulation of the volume for one species regardless of where it occurs.

One-third of Idaho's growing-stock volume, 13.2 billion cubic feet, is found in the Douglas-fir forest type (table 14). Grand fir type contains the second largest portion, 16 percent, and true spruce-fir type (Engelmann spruce and subalpine fir) ranks third with 14 percent.

Douglas-fir as a species accounts for 31 percent, or 12.4 billion cubic feet, of Idaho's growing-stock volume (fig. 9). Grand fir makes up 15 percent of the State's growing-stock volume; lodgepole pine is the third most abundant species with 14 percent. Hardwoods account for just 2 percent of the growing-stock volume in Idaho. About 83 percent of total volume is in trees that are sawtimber-size (table 20).

National Forest System lands contain 76 percent, or 30.1 billion cubic feet, of the growing-stock species cubic volume. National Forest System lands averaged 2,353 cubic feet per acre; other ownerships averaged 1,960 cubic feet per acre.

National Forest System lands contain 109.9 billion board feet, or 77 percent, of total board-foot volume (Scribner rule) as well. National Forest System lands averaged 8,576 board feet per acre; other ownerships averaged 6,805 board feet per acre.

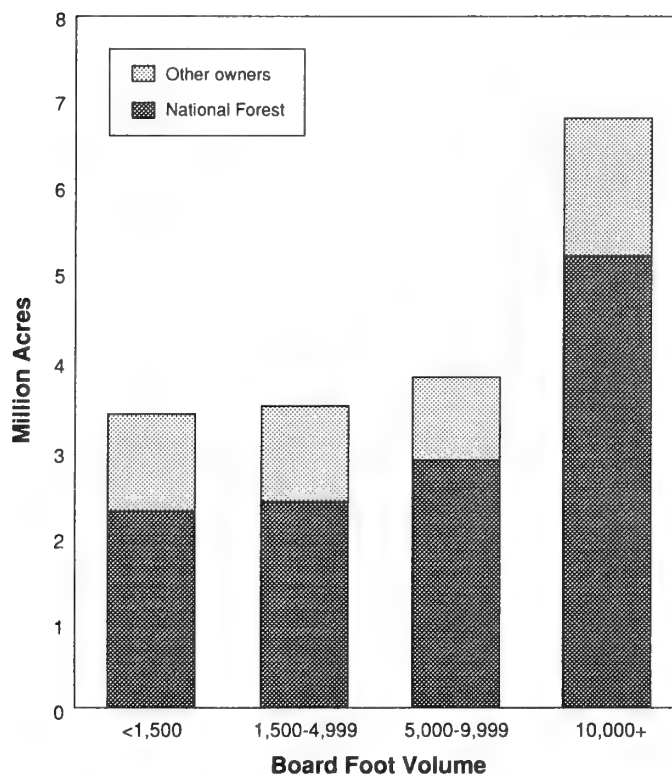
Of course volume does not occur evenly across timberland. For instance, about 39 percent, or 6.8 million acres, of Idaho's timberland supports at least 10,000 board feet per acre (fig. 11). Another 22 percent has from 5,000 to 9,999 board feet per acre. Those areas supporting only 1,500 to 4,999 board feet per acre account for 20 percent of the area. About 19 percent contains less than 1,500 board feet per acre. A larger proportion (77 versus 67 percent) of the high-volume stands (10,000+ board feet per acre) are under NFS administration than are the low-volume stands (less than 1,500 board feet per acre).

## Mortality

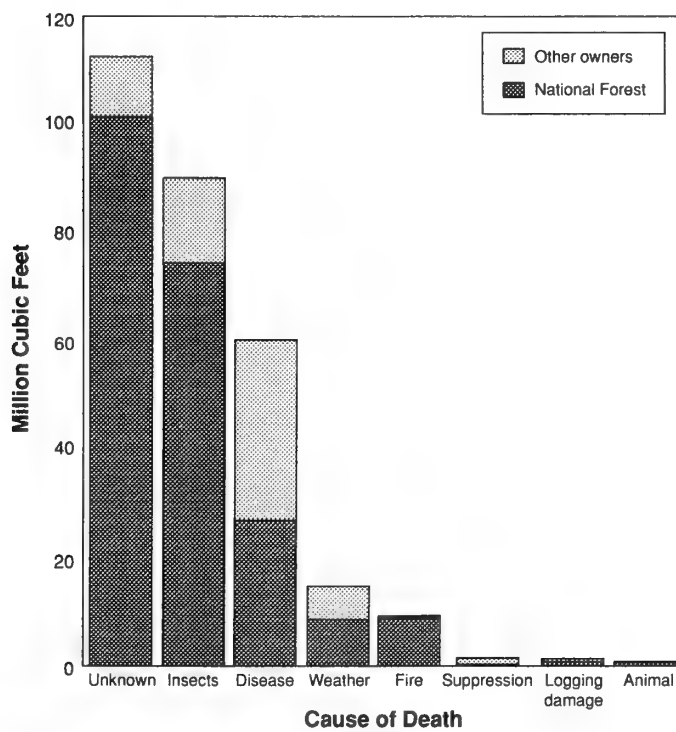
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The dynamics of forests include continual losses to natural agents and human disturbance. The mortality incurred can vary over time and is best expressed as an average. Although mortality is the volume loss from natural causes, it includes losses originating from logging damage to trees left alive but weakened and susceptible to natural agents.

Average annual mortality of growing stock totaled 290 million cubic feet (table 33). Cause of death was not identifiable for 39 percent. Insects were the leading identifiable cause of death (fig. 12), accounting for 31 percent of the mortality. Various tree diseases caused another 21 percent. Weather and fire accounted for just 5 and 3 percent, respectively. Suppression, logging damage, and animals cumulatively accounted for the remaining 1 percent.



**Figure 11**—Area of nonreserved timberland by stand volume per acre class and ownership group, Idaho, 1991.



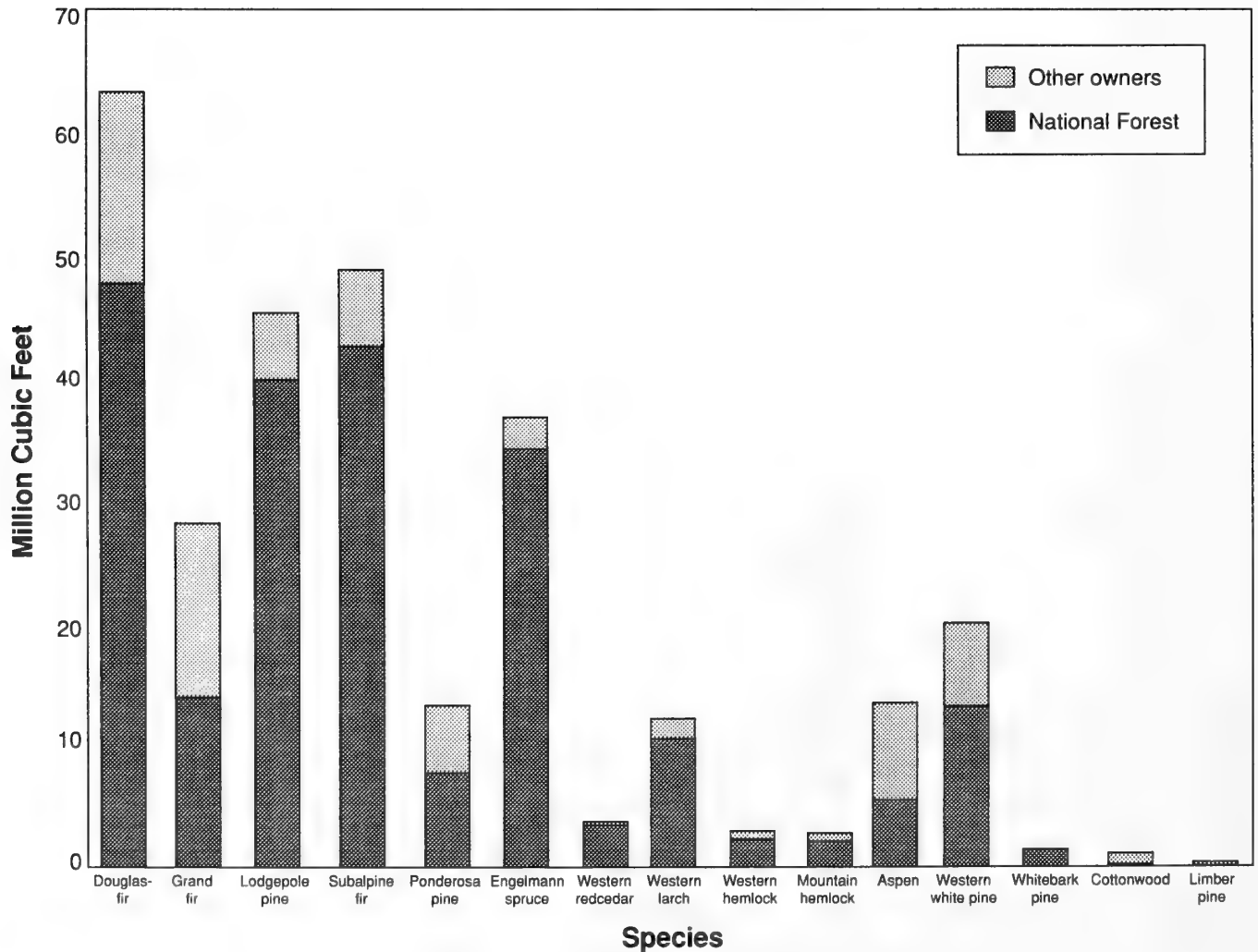
**Figure 12**—Volume of mortality on nonreserved timberland by cause of death and ownership group, Idaho, 1991.

The average rate of mortality was 17.2 cubic feet per acre per year on timberland under NFS administration. The comparable rate on other owner-ships was 14.5 cubic feet per acre per year. The majority of volume lost to insects, weather, fire, logging, and animals happened on NFS lands. Practically all of the mortality from fire occurred on NFS lands. Volume lost to suppression and disease was higher on other ownerships.

Douglas-fir species accounted for 22 percent of total mortality (fig. 13). Next was subalpine fir with 17 percent, lodgepole pine was third with 16 percent, Engelmann spruce was fourth with 13 percent, and grand fir followed with 10 percent. Hardwoods comprised 5 percent of the mortality volume.

Douglas-fir and grand fir proportions of mortality volume were considerably less than their proportions of inventory volume. In contrast, the proportions of mortality volume for subalpine fir, lodgepole pine, Engelmann spruce, western white pine, and the hardwoods were more than their proportions of inventory volume.

With the exception of grand fir and the hardwoods, the majority of mortality for each species occurred on NFS lands.



**Figure 13**—Volume of mortality on nonreserved timberland by species and ownership group, Idaho, 1991.

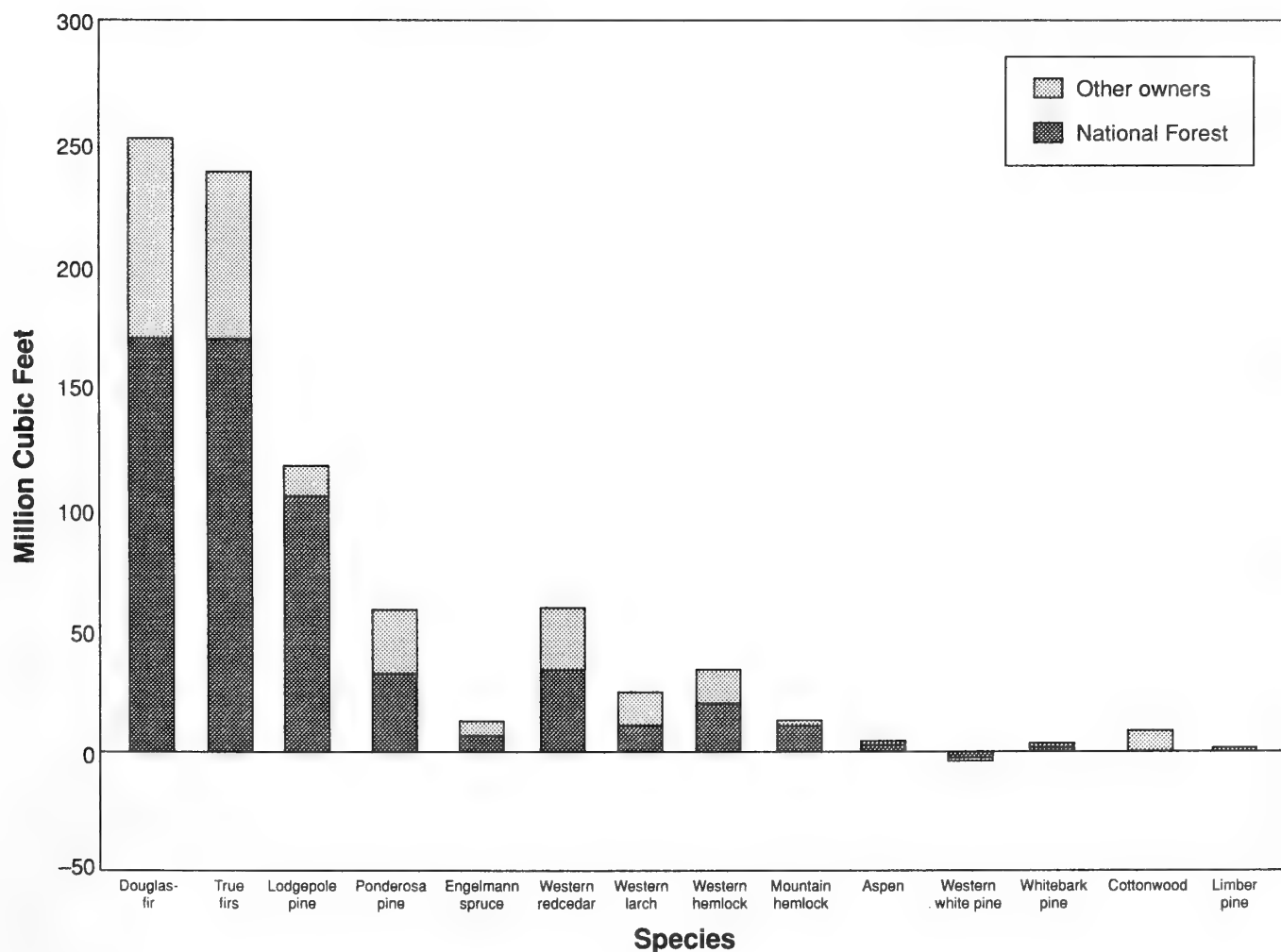
## Net Growth

Gross growth minus mortality yields net growth. Average net annual growth of growing stock on timberland totaled 816 million cubic feet and included 3.5 billion board feet of sawtimber (Scribner rule).

Douglas-fir species alone accounted for 31 percent, or 250.1 million cubic feet, of the net growth (fig. 14). Of the true firs, grand fir contributed the next largest amount of growth with 22 percent. The third highest portion of growth, 14 percent, came from lodgepole pine. Western white pine was the only species not experiencing net gains in growth. Due to the effects of mortality, its net growth was negative.

Over two-thirds of the net growth occurred on NFS lands. Although substantial, this is below NFS percentages of 73 percent for area and 76 percent for volume. NFS lands provided most of the net growth for the major species, but only half for spruce and just over a third in hardwoods.

Net growth averaged 43.2 cubic feet per acre per year on NFS lands and 54.7 cubic feet per acre per year on other ownerships. Net growth averaged higher on other ownerships than on NFS lands probably because of the



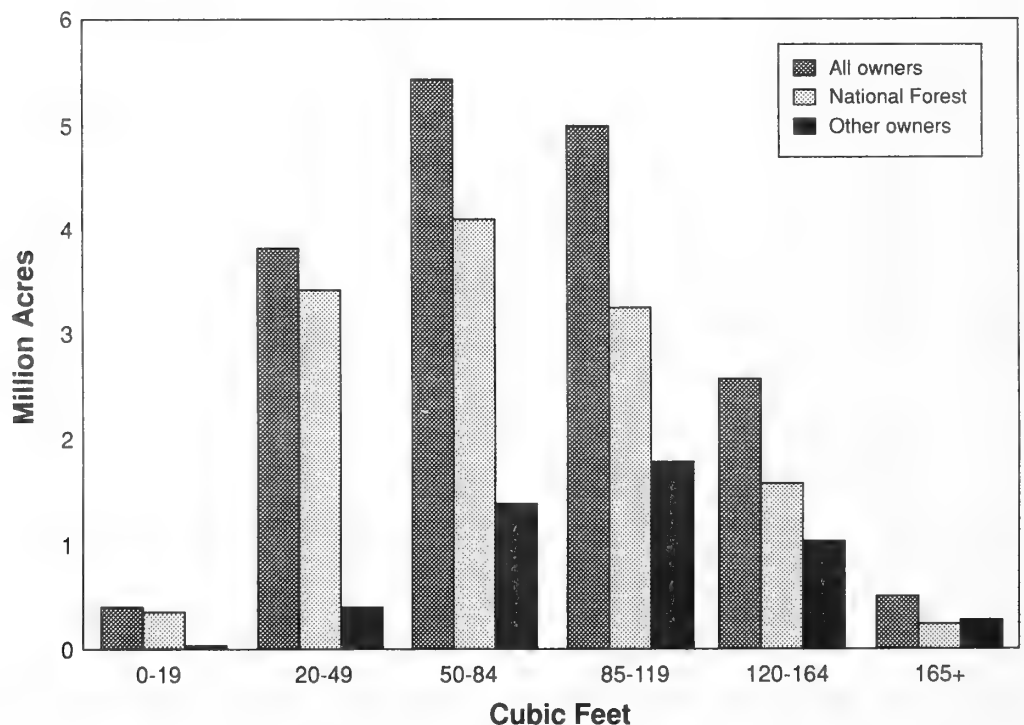
**Figure 14**—Volume of net annual growth on nonreserved timberland by species and ownership group, Idaho, 1991.

generally younger age structure of stands. Younger stands tend to be more vigorous in terms of growth. Another possibility is that older stands, more prevalent on NFS lands, are usually more susceptible to mortality, which lowers net growth. In addition, forest industry tends to own more highly productive lands that are also intensively managed, thus contributing to the higher net growth per acre on other ownerships.

A site's productivity potential is related to net growth. The majority of Idaho's timberland is capable of producing between 50 and 119 cubic feet per acre per year (fig. 15). However, some 4.2 million acres are limited to producing less than 50 cubic feet per acre per year, and 3 million acres are capable of more than 120 cubic feet per acre per year. Sites with the lowest potential productivity are predominantly NFS lands. On the other hand, sites with the highest potential productivity occur almost as frequently under other ownerships as under NFS management. The majority of lands within each owner category are skewed in different directions of productivity. Area of NFS lands peaks more toward the lower end of the productivity scale, while area of lands under other ownerships peaks toward the higher end of the scale.

## Removals

Idaho's forests contribute significantly to wood products used by consumers. Removals include the volume processed and the volume harvested or killed and not utilized.



**Figure 15**—Area of nonreserved timberland by volume growth per acre per year class and ownership group, Idaho, 1991.

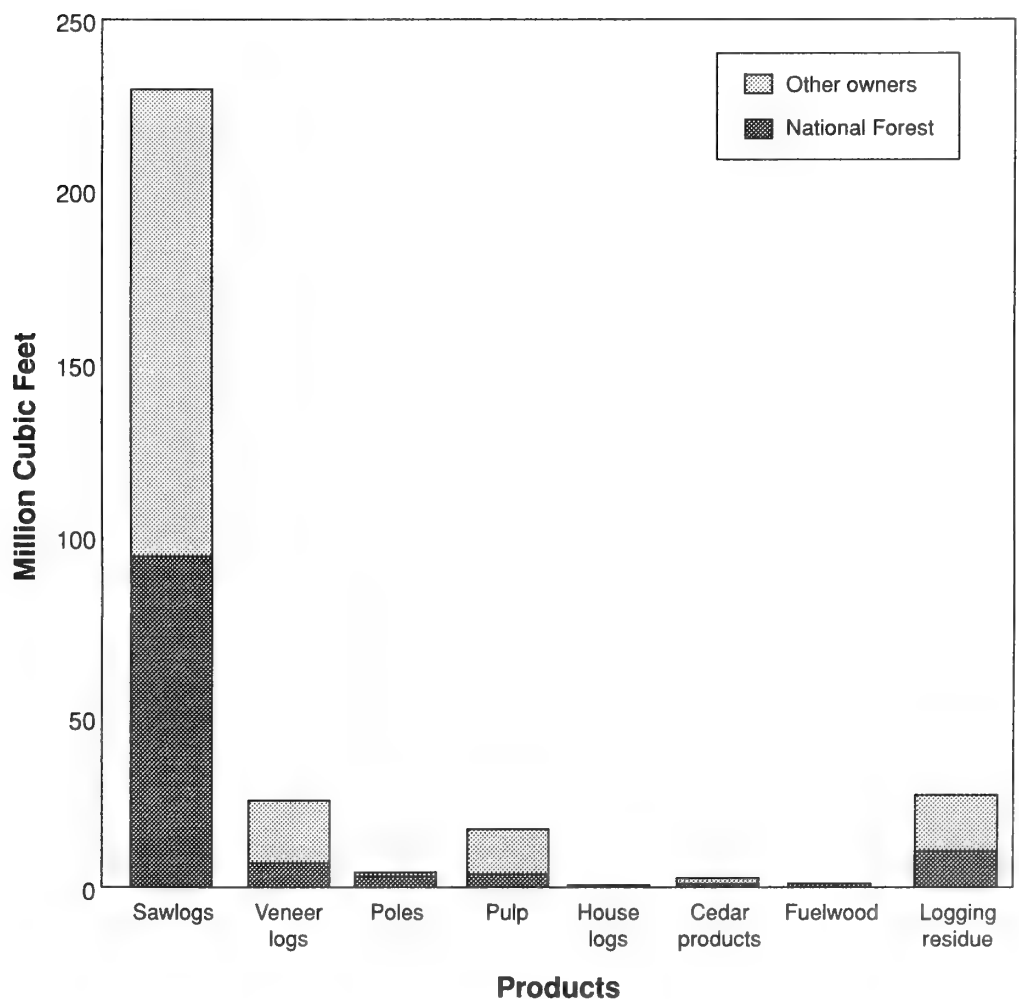


About 309 million cubic feet of growing stock (absent land clearing volume) were removed from Idaho's timberland in 1990 (McLain 1996). Growing-stock removals included 1,584 million board feet (Scribner rule). Almost 91 percent of the removals were harvested for various timber products; less than 1 percent went for fuelwood, and nearly 9 percent were not utilized and left in the woods as logging residue (fig. 16).

Sawlogs dominated products harvested and accounted for 75 percent of growing-stock removals. Veneer logs made up 8 percent of growing-stock removals. Pulp and fiberwood comprised another 5 percent. The remaining 3 percent was divided among posts, poles, cedar products, and house logs (table 42).

True firs accounted for 24 percent of the growing-stock volume removed and Douglas-fir for 22 percent (fig. 17). Ponderosa pine accounted for the next highest portion of growing-stock removals with 15 percent, yet it was just 7 percent of the inventory volume. Lodgepole pine and western redcedar followed, each with 11 percent of removals (table 43).

National Forests supplied 40 percent of the growing-stock volume removed, far less than their 68 percent of net annual growth and 76 percent of inventory volume in the State. In contrast, other ownerships supplied 60 percent of the

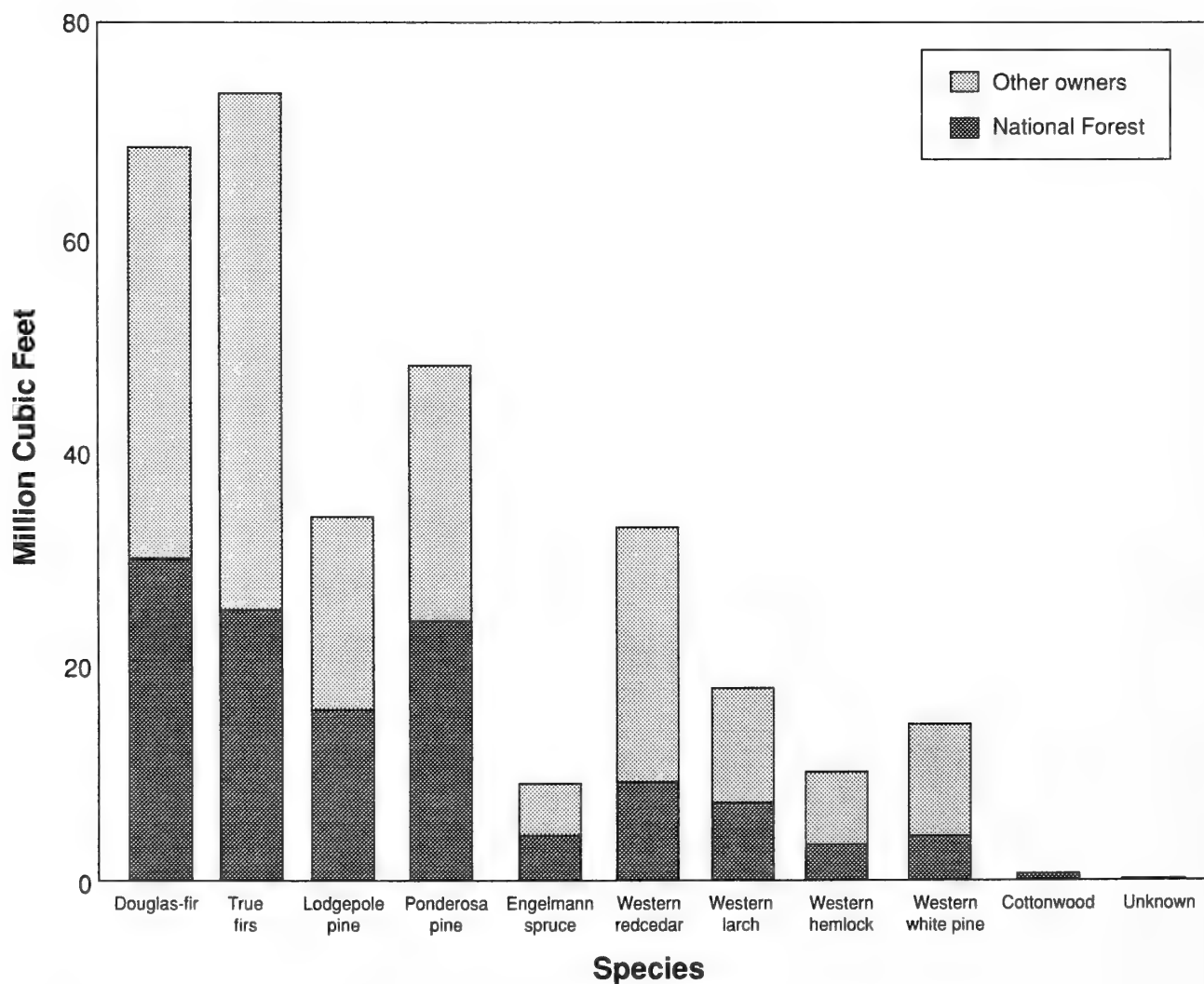


**Figure 16**—Volume of products harvested from growing-stock trees on nonreserved timberland by product and ownership group, Idaho, 1991.

growing-stock volume removed, far more than their 32 percent of net annual growth and 24 percent of inventory volume. These findings are evidence of vastly different management and use of public versus private timberlands.

In addition to growing stock, some volume from salvable dead, rough cull, and rotten cull trees was also removed, boosting total volume removed to 333.4 million cubic feet. Most of this additional volume went for fuelwood, leaving 311 million cubic feet harvested for timber products (McLain 1996).

Removals are obtained from several types of cutting methods. Those evident within the year previous to the 1991 survey were recorded on other ownerships and combined with those reported for 1990 on NFS lands. The most frequent type of cutting encountered was selective cutting, which occurred on 44 percent of the acres receiving some type of harvest (fig. 18). This category includes those acres selectively cut under a management scheme, as well as those acres that appeared to have been selectively cut in the absence of an identifiable management objective. Clearcutting was the second most common type of harvest method; overstory removal was third. Overall, other ownerships accounted for three-fourths of all acres receiving



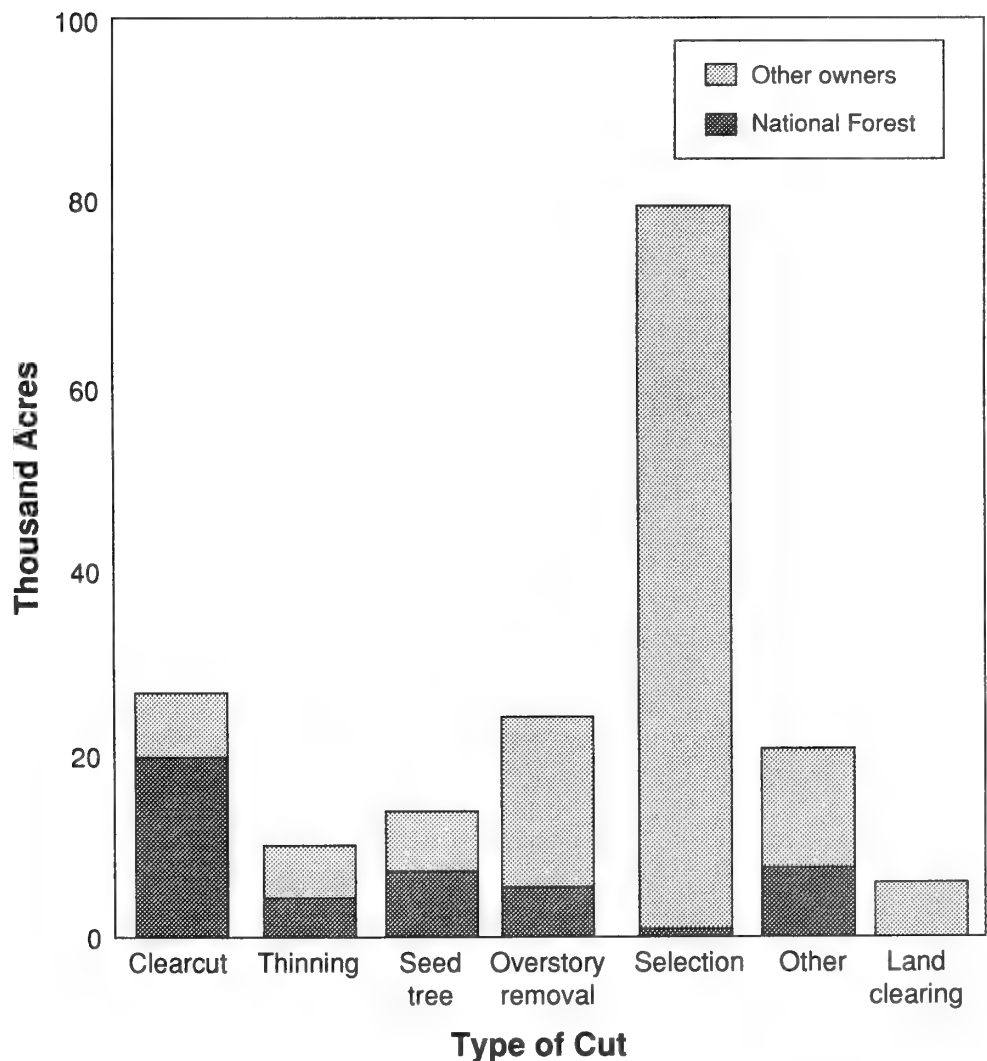
**Figure 17**—Volume of growing-stock removals from nonreserved timberland by species and ownership group, Idaho, 1991.

some type of cutting. However, most of the cutting on other ownerships involved selection and overstory removal; they accounted for 99 and 77 percent of the acres cut, respectively. The NFS lands accounted for three-fourths of the acres clearcut, but approximately half or less of the acres in other types of cutting.

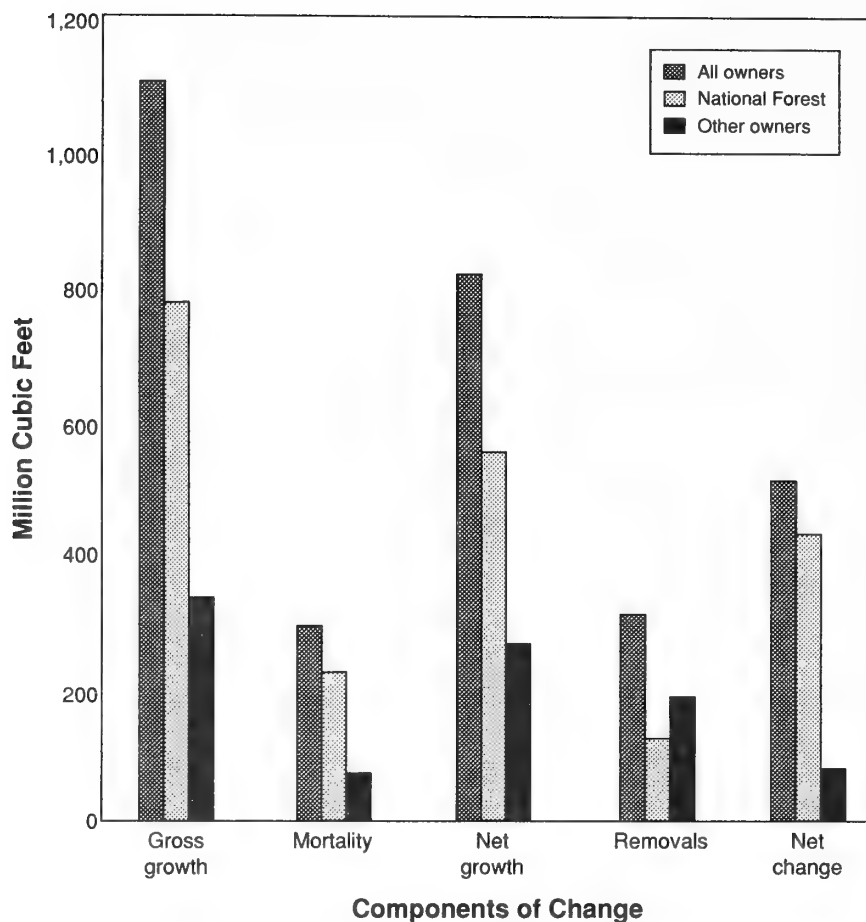
## Net Change

Removals, along with net growth and mortality are all components of change, which alter the gross growth occurring in the inventory of growing stock on Idaho's timberland. Gross growth (GG) is initially reduced by losses to mortality (M) leaving net growth (NG). Removals (R) lessen the gains acquired from net growth. Comparing net growth to removals gives an estimate of net change (NC) to the inventory of growing stock in Idaho (fig. 19).

$$GG - M = NG - R = NC$$



**Figure 18**—Area of nonreserved timberland receiving a cut by type of cutting and ownership group, Idaho, 1990. Land clearing includes cutting for woods, roads, fencing, power lines, etc. within timberland other cutting includes salvage cuts.



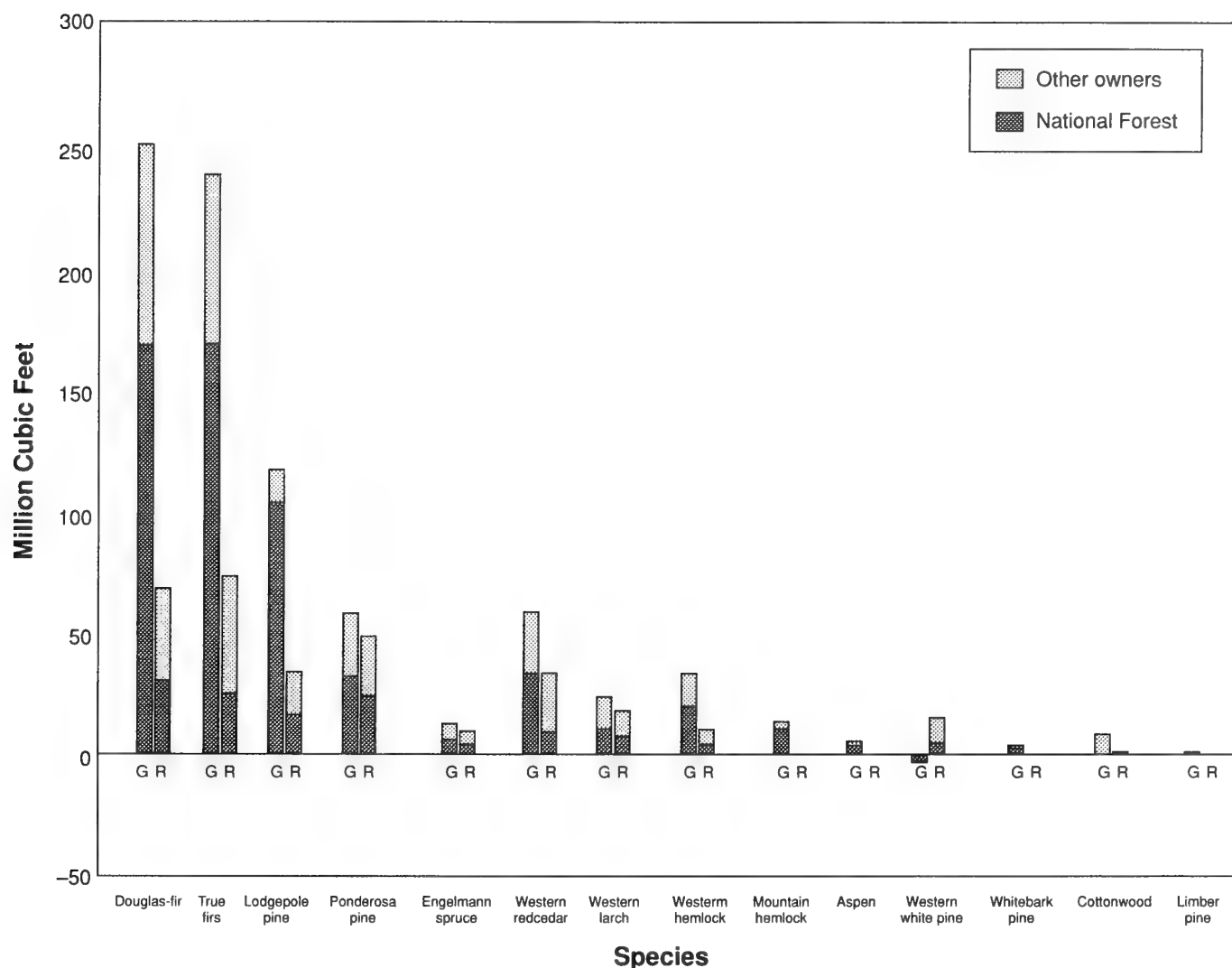
**Figure 19**—Volume related components of change by ownership group, Idaho, 1991.

Overall, net growth is nearly triple removals, portraying an optimistic future for wood supplies. The growth to removal ratios for individual species provide further insight to potential changes in the resource. The growth to removal ratios are surplus for all species except western white pine (fig. 20). This particular species is experiencing an overcut which, along with proportionately high mortality, is placing it in jeopardy of continued decline, as noted in figure 5.

Compared to most other species, the growth to removal ratios are closer for ponderosa pine, Engelmann spruce, and western larch. For these species, the excess of growth is much less.

Hidden in the overall growth to removal ratios are differences by ownership (fig. 19). In general, the growth to removal ratio is closer on other ownerships (1.4:1) than it is on NFS lands (4.5:1). Nearly all species have significant surplus growth on NFS lands; this is not the case on other ownerships (fig. 20). On other ownerships, growth to removal ratios are nearly 1:1 for ponderosa pine, Engelmann spruce, and western redcedar (tables 36 and 43). Removals actually exceed growth for lodgepole pine on other ownerships where the growth to removal ratio is 0.7:1.

In summary, the positive net change in volume is promising, but misleading, especially since more of the gains originate from NFS lands than from other ownerships. The 1990 level of removals relied on NFS lands as a



**Figure 20**—Net annual growth of growing stock compared to average annual removals by species and ownership group, Idaho, 1991. G = net growth and R = removal.

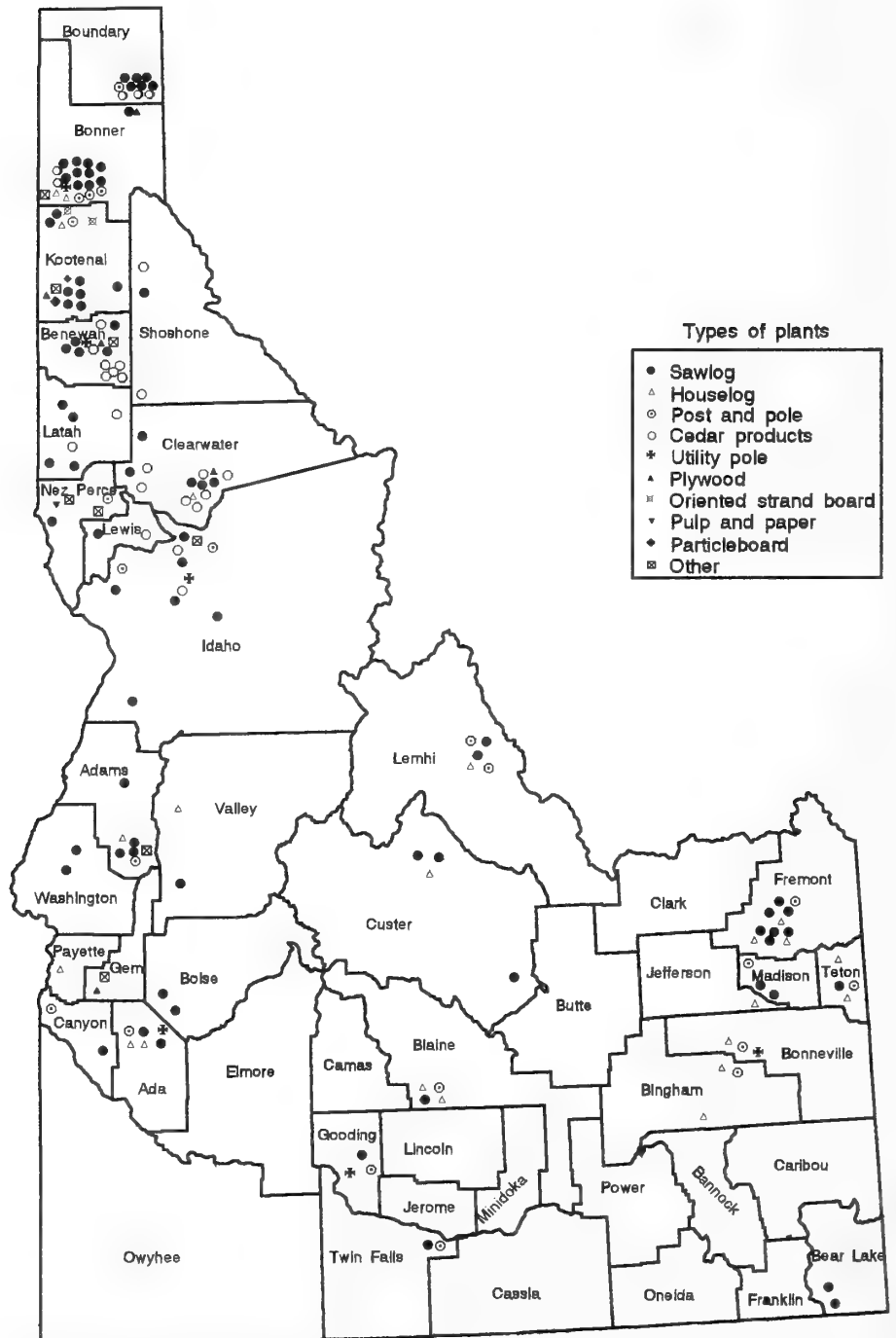
significant source of volume. Trends in constraints and limitations to cutting on NFS lands are curtailing availability from this source. The closer growth to removals relationship on other ownerships leaves little room to compensate for any prospective changes in the available wood supply. The 1990 level of removals may be difficult to sustain under these circumstances.

## Forest Products Industry

The availability of wood is of prime importance to Idaho's forest products industry, which plays a major role in the State's economy.

Idaho's forest products industry continues to be the primary nonfarm basic industry, providing almost one-fifth of the State's 1990 basic labor income (Keegan and others 1992). The forest products industry accounted for 44 percent of the basic industry labor income in northern Idaho, where 60 percent of all forest products industry labor income was earned. Nearly 21,000 workers were employed by the industry in 1990, with earnings second only to those employed in the mining and railroad industries.

The 1990 earnings came from the operation of 172 primary forest products plants active in 30 of Idaho's 44 counties. Plant numbers increased by one since the recession of the 1980's but remain below numbers existing in the late 1970's. The total number of plants was composed of 80 sawmills, 5 plywood plants, 1 oriented strand board plant, 1 particleboard plant, 1 pulp and paper mill, 26 cedar products plants, 22 house log plants, 21 post and pole plants, 6 utility pole plants, and 9 other facilities including wood fuel pellet plants, chipping plants, and wood-fueled power generating plants (fig. 21). In addition, 39 major secondary forest products plants operated in 16 Idaho counties.



**Figure 21**—Distribution of primary wood products firms, Idaho, 1990.

Altogether, 1990 sales in Idaho's primary and major secondary forest products industry approached \$1.5 billion, up from the recession years but still below the 1970's in comparable dollars. Lumber production in 1990 topped 2 billion board feet, almost 6 percent of U.S. output of softwood lumber. Although lumber production was Idaho's second highest on record, the sawmill share of sales was down from 62 percent in 1979 to 45 percent in 1990. In 1990, utilization of mill residue improved to 98 percent and its share of sales rose from 25 percent in 1979 to 42 percent in 1990. The main markets for Idaho's primary wood products are the North-central States, followed by the West Coast States (including Alaska and Hawaii), and then the North-east States.

## Methods

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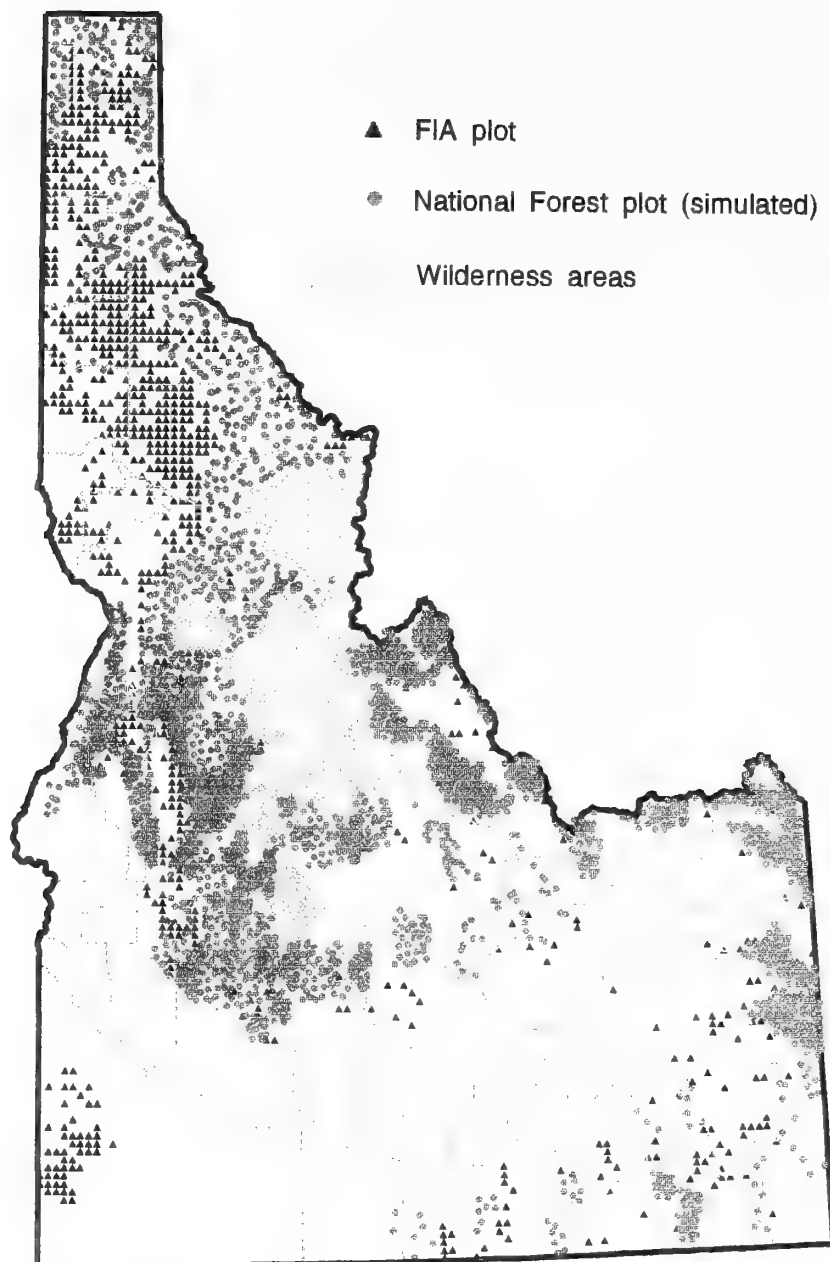
Data for National Forests were collected by NFS. The IWRIME collected the data for all other ownerships by placing a grid over maps to select points for sampling using two phase or double sampling (Cochran 1963). In phase one, land ownership and forest land categories were determined from land status maps and aerial photographs for nearly 131,000 map points located with a 1,000 m grid spacing (table 3). Stratification categories included land ownership, county groupings, and several land cover classes. In phase two, 4 percent of the phase one points were systematically selected using a 5,000 m grid for establishing field plots in 1990 and 1991 (fig. 22). This corresponded to sample intensities of between 6,000 and 7,000 acres for each sample location. Each second phase plot consisted of a cluster of five variable radius subplots that covered about an acre (USDA Forest Service 1990). At each subplot, trees 5.0 inches d.b.h. and larger were selected using a 40 square foot per acre basal area factor (BAF) angle gauge. Trees between 1.0 and 4.9 inches d.b.h. were measured on a  $\frac{1}{300}$  acre micro plot within each subplot.

For the northern Idaho National Forests—Idaho Panhandle, Clearwater, and Nez Perce—sample selection was done by placing a 5,000 m grid over all nonreserved lands to select “stands.” Stands are the smallest management units on National Forests, defined as polygons of similar vegetation ranging in size from several acres to over 100 acres. Some existing stand exam data were available for the 5,000 m grid intersections, but 30 to 60 percent of the data were from new stand examinations done in 1991 and 1992 to fill in gaps.

Stand exams differ from the FIA sample design in that subplots (points) are spaced across an entire stand. The median number of subplots sampled within a stand ranged from 8 to 12 for the northern Idaho National Forests. Field measurements were similar to the FIA field procedures (USDA Forest Service 1991), and sampling intensity was about 1 acre sampled per 7,000 to 10,000 acres.

Data for the southern Idaho National Forests came from inventories or stand exams that were conducted between 1974 and 1991 (table 3). The inventories were similar to the FIA design in that 5, 7, or 10 variable radius subplots (mostly 20 or 40 BAF) were used to sample trees within a 1 acre plot. Those data collected as stand exams were sampled similarly to data from the northern Idaho National Forests.

Sampling intensities of the southern Idaho National Forests were about 1 acre sampled per 1,000 to 7,000 acres. Some of the data were collected 10 to 20 years ago, which complicates combining them with more recent data, but tree removal, a major component of change, was very low on the Forests



**Figure 22**—Location of the 3,291 field plots inventoried between 1974 and 1993. Geographic reference for NFS data was unavailable for individual plots or stands.

with the older data. For example, the 1974 Challis data came from a National Forest that harvests less than 0.1 percent of its volume annually (Bradley 1995).

Data from 3,921 field plots are included in this report. More than 80 percent of the field plots were on National Forests (fig. 22). Table 2 lists percent standard errors that can be used to assess the variability of the estimates of area, volume, growth, and mortality for the entire Idaho inventory.

The percent standard error (SE) can also be viewed as a confidence interval at the 67 percent level, and double the SE is roughly a confidence interval at the 95 percent level. The 95 percent confidence interval for total timberland area estimates ranged from 17.5 to 17.7 million acres (0.5 percent SE).



Similarly, timberland volume ranged from 38.9 to 40.2 billion cubic feet (1.6 percent SE). Net annual growth ranged from 0.79 to 0.84 billion cubic feet (2.7 percent SE), and annual mortality ranged from 0.27 to 0.30 billion cubic feet (4.5 percent SE).

Standard errors for data other than the totals (table 2) are not given in this report, but as the data are subset into smaller categories the errors should be expected to increase. The results are reported for individual items. However, it is not recommended that individual data items be used in isolation. The user should instead aggregate data cells as much as possible. Sampling error for a combination of data items or counties may be estimated using the following formula:

$$SE_g = \frac{SE_t \sqrt{X_t}}{\sqrt{X_g}}$$

where:

- $SE$  = standard error of the estimate (expressed as a percent)
- $X$  = variable of interest (area or volume)
- $g$  = group of data items to be combined
- $t$  = total for the State

## Standard Forest Survey Terminology

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**Basal area**—The cross-sectional area of a tree expressed in square feet. For timber species the calculation is based on diameter at breast height (d.b.h.); for woodland species it is based on diameter at root collar (d.r.c.).

**Christmas tree grade**—Pinyon species are classified as Christmas trees using the following guidelines:

- Premium**—Excellent conical form with no gaps in branches and a straight bole.
- Standard**—Good conical form with small gaps in branches and bole slightly malformed.
- Utility**—Conical in form with branches missing and bole bent or malformed.
- Cull**—Not meeting one of the above classifications or over 12 feet in height.

**Cord**—A stack of wood equivalent to 128 cubic feet of wood and air space having standard dimensions of 4 by 4 by 8 feet. An average conversion factor of 75 cubic feet of solid wood volume per cord is used.

**Crown cover**—Percentage of the ground surface covered by a vertical projection of tree crowns. Synonymous with canopy cover.

**Cull trees**—Live timber species trees that are unmerchantable now or prospectively (see Rough trees and Rotten trees).

**Cull volume**—Portions of the volume in a timber species tree that are not usable for wood products because of rot, missing material, dead material, or other cubic foot defect.

**Diameter at breast height (d.b.h.)**—Diameter of the stem measured 4.5 feet above the ground.

- Diameter at root collar (d.r.c.)*—Diameter equivalent for a woodland species, taken at the point nearest the ground line that represents the basal area of the tree stem or stems.
- Diameter classes*—Tree diameters, either d.b.h. or d.r.c., grouped into 2 inch classes, with the even inch the midpoint for the class.
- Diameter outside bark (d.o.b.)*—Tree diameter measurement taken over the bark.
- Distance to road*—The distance from a sample site to the nearest improved road that could be accessed from the site. Improved roads are permanent maintained roads.
- Farmer/rancher-owned lands*—Lands owned by a person who operates a farm or a ranch and who either does or directly supervises the work.
- Fenceposts*—Juniper and oak species are evaluated for post potential using the following criteria:
- Line post—A 7 foot minimum length with a 5 to 7 inch diameter butt, 2.5 inch minimum small-end diameter, and reasonably straight and solid.
  - Corner post—An 8 foot minimum length with a 7 to 9 inch diameter butt, 2.5 inch minimum small-end diameter, and reasonably straight and solid.
- Forest industry lands*—Lands owned by companies or individuals operating a primary wood processing plant, either within the State's boundaries or in nearby States or Provinces.
- Forest lands*—Lands at least 10 percent stocked by forest trees of any size, including lands that formerly had such tree cover and that will be regenerated naturally or artificially. The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of trees must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if they are less than 120 feet wide.
- Forest trees*—Woody plants having a well-developed stem or stems, usually more than 12 feet tall at maturity, with a generally well-defined crown.
- Forest type*—A classification of forest land based on and named for the tree species presently forming a plurality of live tree stocking.
- Gross annual growth*—The average annual increase in the net volume of trees.
- Gross volume in board feet*—The board-foot volume in the sawlog portion of a sawtimber tree. Volume is computed from a 1 foot stump to a minimum sawlog top of 7 inches d.o.b. for softwoods, or 9 inches d.o.b. for hardwoods; or to the point where the central stem breaks into limbs.
- Growing-stock trees*—Live timber species trees meeting specified standards of quality and vigor; excludes cull trees.
- Growing-stock volume*—Net cubic-foot volume in live poletimber size and sawtimber size growing-stock trees from a 1 foot stump to a minimum 4 inch top (of central stem) outside bark or to the point where the central stem breaks into limbs.
- Growth*—See Net annual growth.

*Hardwood trees*—Trees that are usually broad leaved and deciduous.

*Indian Trust*—Indian lands held in trust by the Federal Government for a Native American tribe or individual.

*Industrial wood*—All commercial roundwood products except fuelwood.

*Land area*—The area of dry land and land temporarily or partially covered by water such as marshes, swamps, river flood plains, streams, sloughs, estuaries, and canals less than 120 feet wide; and lakes, reservoirs, and ponds less than 1 acre.

*Logging residue*—The unused portions within the merchantable sections of growing-stock trees cut or killed during logging.

*Mill or plant residue*—Wood material from mills or other primary manufacturing plants that is not utilized for the mill's or plant's primary product. Mill or plant residue includes bark, slabs, edgings, trimmings, miscuts, sawdust, and shavings. Much of the mill and plant residue is used as fuel and as the raw material for such products as pulp, pelletized fuel, fiberwood, mulch, and animal bedding. Mill or plant residue includes bark and the following components:

- Coarse residue—Wood material suitable for chipping, such as slabs, edgings, and trim.
- Fine residue—Wood material unsuitable for chipping, such as sawdust, shavings, and veneer clippings.

*Miscellaneous Federal lands*—Lands administered by Federal agencies other than the Forest Service, U.S. Department of Agriculture, or the Bureau of Land Management, U.S. Department of the Interior.

*Mortality*—The net volume of growing-stock trees that have died from natural causes during a specified period.

*National Forest lands*—Public lands administered by the Forest Service, U.S. Department of Agriculture.

*Net annual growth*—Gross annual growth minus average annual mortality.

*Net dead volume*—For woodland species, net volume of dead trees plus net volume of dead material in live trees.

*Net volume in board feet*—The gross board-foot volume in the sawlog portion of growing-stock trees, less deductions for cull volume.

*Net volume in cubic feet*—For timber species, gross cubic-foot volume in the merchantable portion of trees, less deductions for cull volume. Volume is computed for the merchantable stem from a 1 foot stump to a minimum 4 inch top d.o.b., or to the point where the central stem breaks into limbs. For woodland species, gross cubic-foot volume less deductions for dead, missing, and rotten material. Volume is calculated for trees 3.0 inches and larger d.r.c. to a stem or branch top of 1.5 inches d.o.b.

*Nonforest lands*—Lands that do not currently qualify as forest land.

*Nonindustrial private*—All private ownerships except forest industry.

*Nonstocked areas*—Forest land less than 10 percent stocked with live trees.

*Other private lands*—Privately owned lands other than forest industry or Indian Trust.

- Other public lands*—Public lands administered by agencies other than the Forest Service, U.S. Department of Agriculture. Includes lands administered by other Federal, State, county, and local government agencies, including lands leased by these agencies for more than 50 years.
- Other removals*—The net volume of growing-stock trees removed from the inventory by cultural operations, such as timber stand improvement, by land clearing, and by changes in land use, such as a shift to wilderness.
- Poletimber stands*—Stands at least 10 percent stocked with growing-stock trees, in which half or more of the stocking is sawtimber or poletimber trees or both, with poletimber stocking exceeding that of sawtimber (see Stocking).
- Poletimber trees*—Live timber species trees at least 5 inches d.b.h., but smaller than sawtimber.
- Potential growth*—The average net annual cubic-foot growth per acre at culmination of mean annual growth attainable in fully stocked natural stands.
- Primary wood processing plants*—Plants using roundwood products, such as sawlogs, pulpwood bolts, and veneer logs.
- Productivity*—Potential yield capability of a stand (in cubic feet per acre per year) calculated here as a function of site index.
- Productivity class*—A classification of forest land that reflects biological potential. For timberlands, the index used is the potential net annual growth at culmination of mean annual increment in fully stocked natural stands. Woodland is classified as “high site” where sustained wood production is likely, or as “low site” where the continuous production of wood is unlikely.
- Removals*—The net volume of growing-stock trees removed from the inventory by harvesting, cultural operations, land clearing, and changes in land use.
- Reserved forest land*—Forest land withdrawn from tree utilization through statute or administrative designation.
- Residue*—See Mill or plant residue.
- Rotten trees*—Live poletimber or sawtimber trees with more than 67 percent of the total cubic-foot volume cull and with more than half of the cull volume attributable to rotten or missing material.
- Rough trees*—Live poletimber or sawtimber trees with more than 67 percent of the total cubic-foot volume cull and with less than half of the cull volume attributable to rotten or missing material.
- Roundwood*—Logs, bolts, or other round sections cut from trees.
- Salvable dead trees*—Standing dead timber species trees that meet growing-stock standards.
- Saplings*—Live timber species trees 1 to 4.9 inches d.b.h. or woodland tree species 1 to 2.9 inches d.r.c.
- Sapling and seedling stands*—Timberland stands at least 10 percent stocked on which more than half of the stocking is saplings or seedlings, or both.

- Sawlog portion*—That part of the bole of sawtimber trees between a 1 foot stump and the sawlog top.
- Sawlog top*—The point on the bole of sawtimber trees above which a sawlog cannot be produced. The minimum sawlog top is 7 inches d.o.b. for softwoods and 9 inches d.o.b. for hardwoods.
- Sawtimber stands*—Stands at least 10 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.
- Sawtimber trees*—Live timber species trees meeting regional size and defect specifications. Softwood trees must be at least 9 inches d.b.h. and hardwood trees 11 inches d.b.h.
- Sawtimber volume*—Net volume in board feet of the sawlog portion of live sawtimber trees.
- Seedlings*—Established live timber species trees less than 1 inch d.b.h. or woodland species less than 1 inch d.r.c.
- Site index*—Expected height (in feet) of a tree on a site at age 50 (or 80 for aspen and cottonwood) calculated from height-to-age equations. Trees selected for site index calculations are dominant or codominant within the stand, age 30 to 200 years, showing high vigor.
- Softwood trees*—Coniferous trees that are usually evergreen and have scalelike or linear needlelike leaves.
- Standard error*—An expression of the degree of confidence that can be placed on an estimated total or average obtained by statistical sampling methods. Standard errors do not include technique errors that occur in photo work, field measurements, or compilation.
- Stand-size classes*—A classification of forest land based on the predominant size of trees present (see Sawtimber stands, Poletimber stands, and Sapling and seedling stands).
- Stocking*—An expression of the extent to which growing space is effectively utilized by present or potential growing-stock trees.
- Stocking condition*—A categorization of timberland reflecting the degree to which the site is being utilized by growing-stock trees and other conditions affecting current and prospective timber growth (see Stocking):
- Overstocked—Sites at least 60 percent stocked with growing-stock trees, but overstocked with live trees, including live cull trees.
  - Fully stocked—Sites at least 60 percent stocked with growing-stock trees and not overstocked.
  - Medium to fully stocked—Sites 35 to 60 percent stocked with growing-stock trees. Includes areas where other trees, inhibiting vegetation, or surface conditions prevent occupancy by growing-stock trees.
  - Poorly stocked—Sites less than 35 percent stocked with growing-stock trees.
  - Nonstocked—Forest land less than 10 percent stocked with growing-stock trees.
  - Mature—Sites with stands older than 100 years.
- Timberland*—Forest land where timber species make up at least 10 percent stocking. (This is equivalent to the definition for commercial forest land in Forest Service Handbook 4809.)

- Timber species*—Tree species traditionally used for industrial wood products. In the Interior West States, these include aspen, cottonwood, and paper birch hardwood species, and all softwood species except pinyon and juniper.
- Timber stand improvement*—Treatments such as thinning, pruning, release cutting, girdling, weeding, or poisoning of unwanted trees to improve growing conditions for the remaining trees.
- Upper-stem portion*—That part of the main stem or fork of sawtimber trees above the sawlog top to a minimum top diameter of 4 inches outside bark or to the point where the main stem or fork breaks into limbs.
- Water*—Streams, sloughs, estuaries, and canals more than 120 feet wide, and lakes, reservoirs, and ponds larger than 1 acre at mean high water level.
- Wilderness*—An area of undeveloped land currently included in the Wilderness System, managed to preserve its natural conditions and retain its primeval character and influence.
- Woodland*—Forest land where timber species make up less than 10 percent stocking.
- Woodland average stand diameter class*—A woodland stand classification based on the quadratic mean diameter (the diameter corresponding to the tree of average basal area d.r.c.) of the woodland component of the stand.
- Woodland profile*—A classification of woodland that combines slope, volume per acre, site class, and tree crown cover.
- Woodland species*—Tree species not usually converted into industrial wood products. Common uses are fuelwood, fenceposts, and Christmas trees.

## References

- Benson, Robert E.; Green, Alan W.; Van Hooser, Dwane D. 1987. Idaho's forest resources. Resour. Bull. INT-39. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 114 p.
- Bradley, S. S. 1995. (Personal communication). April 26. Challis, ID: U.S. Department of Agriculture, Forest Service, Challis National Forest, Challis Ranger District.
- Chojnacky, David C. 1995. Southern Idaho's forest land outside National Forests, 1991. Resour. Bull. INT-82. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 57 p.
- Cochran, William G. 1963. Sampling techniques. 2d ed. New York: John Wiley and Sons. 413 p.
- Cooper, Stephen V.; Neiman, Kenneth E.; Steele, Robert; Roberts, David W. 1987. Forest habitat types of northern Idaho: a second approximation. Gen. Tech. Rep. INT-236. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 135 p.
- Keegan, Charles E.; Wichman, Daniel P.; Van Hooser, Dwane D.; Gorman, Thomas M.; McClintick, Max W.; Polzin, Paul E. 1992. Idaho's forest products industry: a descriptive analysis 1990. Missoula, MT: University of Montana, Bureau of Business and Economic Research. 51 p.
- McLain, William H. 1996. Logging utilization—Idaho, 1990. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 16 p.
- Steele, Robert; Pfister, Robert D.; Ryker, Russell A.; Kittams, Jay A. 1981. Forest habitat types of central Idaho. Gen. Tech. Rep. INT-114. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 138 p.
- U.S. Department of Agriculture, Forest Service. 1990. Idaho forest survey field procedures, 1990-1991. Unpublished field guide on file at: U.S. Department of Agriculture, Forest Service, Intermountain Research Station, Forestry Sciences Laboratory, Interior West Resource Inventory, Monitoring, and Evaluation Program, Ogden, UT. 181 p.
- U.S. Department of Agriculture, Forest Service. 1991. Field instructions (for) stand examination, Region One, Timber Management Data Handb. 2409.21h R1 Chapter 400. Forest Service Handb., May 1991, Amendment No. 11: Missoula, MT: U.S. Department of Agriculture, Forest Service.
- Wilson, Alvin K. 1962. Timber resources of Idaho. Forest Survey Release No. 3. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 42 p.
- Wilson, Michael J.; Van Hooser, Dwane D. 1993. Forest statistics for land outside National Forests in northern Idaho, 1991. Resour. Bull. INT-80. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 58 p.
- Zhu, Zhiliang; Evans, L. David. 1994. U.S. forest types and predicted percent forest cover from AVHRR. Photogrammetric Engineering and Remote Sensing. 60(5): 525-531.

# Forest Survey Tables

**Table 1—Total area by ownership class and land class, Idaho, 1991.**

Ownership class	Land class										
	Nonreserved				Reserved						
	Timberland	Woodland	Nonforest	Total	Timberland	Woodland	Nonforest	Total			
----- Acres -----											
Land											
Public											
National Forest	12,808,474	250,107	3,428,252	16,486,833	3,755,770	—	213,895	3,969,665	250,107	3,642,147	20,456,498
Other public											
Bureau of Land Management	522,276	388,732	11,254,614	12,165,622	—	—	—	—	522,276	388,732	11,254,614
National Parks¹	—	—	—	—	30,889	4,346	62,419	97,654	30,889	4,346	62,419
Miscellaneous Federal	39,924	6,951	683,906	730,781	406	—	149,159	149,565	40,330	6,951	833,065
State	968,255	88,275	1,557,196	2,613,726	27,000	794	30,994	58,788	995,255	89,069	1,588,190
County and municipal	6,623	6	8,880	15,509	—	—	—	—	6,623	6	8,880
Total other public	1,537,078	483,964	13,504,596	15,525,638	58,295	5,140	242,572	306,007	1,595,373	489,104	13,747,168
Total public	14,345,552	734,071	16,932,848	32,012,471	3,814,065	5,140	456,467	4,275,672	18,159,617	739,211	17,389,315
Private											
Indian Trust	93,838	16,845	448,078	558,761	—	—	—	—	93,838	16,845	448,078
Forest industry	1,239,464	14	104,362	1,343,840	—	—	—	—	1,239,464	14	104,362
Other private	1,934,489	151,433	12,746,137	14,832,059	—	—	—	—	1,934,489	151,433	12,746,137
Total private	3,267,791	168,292	13,298,577	16,734,660	—	—	—	—	3,267,791	168,292	13,298,577
Total land area	17,613,343	902,363	30,231,425	48,747,131	3,814,065	5,140	456,467	4,275,672	21,427,408	907,503	30,687,892
Water											
Total land and water²	17,613,343	902,363	30,231,425	48,747,131	3,814,065	5,140	456,467	4,275,672	21,427,408	907,503	30,687,892
											458,432
											53,481,235

<sup>1</sup>Not included with miscellaneous Federal, a component of other public, for purpose of clarity. These lands are reserved and are included in tables 1 and 4 only

<sup>2</sup>U.S. Department of Commerce, Bureau of the Census. 1980.

**Table 2**—Standard error for sampling area, volume, growth, and mortality for nonreserved timberland in Idaho.

Ownership	Attribute	Number of plots <sup>1</sup>	Area (acres)	Volume	Percent standard error <sup>2</sup>
National Forest	Area, 1991	3,167	12,808,474		0.1
	Net volume, 1991:				
	Growing stock (M cubic feet)	2,970		30,142,162	1.8
	Sawtimber - International ¼-inch rule (M board feet)			128,190,925	2.1
	Sawtimber - Scribner rule (M board feet)			109,850,978	2.1
	Annual mortality, 1990:				
	Growing stock (M cubic feet)	978		220,791	5.3
	Sawtimber - International ¼-inch rule (M board feet)			955,683	5.9
	Sawtimber - Scribner rule (M board feet)			823,219	5.9
	Net annual growth, 1990:				
	Growing stock (M cubic feet)	2,983		552,789	3.3
	Sawtimber - International ¼-inch rule (M board feet)			2,686,261	3.5
	Sawtimber - Scribner rule (M board feet)			2,423,169	3.5
Other owners	Area, 1991	754	4,804,869		1.7
	Net volume, 1991:				
	Growing stock (M cubic feet)	692		9,418,208	3.5
	Sawtimber - International ¼-inch rule (M board feet)			38,640,658	3.8
	Sawtimber - Scribner rule (M board feet)			32,698,534	3.9
	Annual mortality, 1990:				
	Growing stock (M cubic feet)	218		69,506,191	8.5
	Sawtimber - International ¼-inch rule (M board feet)			242,288	11.4
	Sawtimber - Scribner rule (M board feet)			206,091	11.6
	Net growth, 1990:				
	Growing stock (M cubic feet)	699		262,937	4.6
	Sawtimber - International ¼-inch rule (M board feet)			1,228,626	4.8
	Sawtimber - Scribner rule (M board feet)			1,087,394	4.8
Total	Area, 1991	3,921	17,613,343		0.5
	Net volume, 1991:				
	Growing stock (M cubic feet)	3,662		39,560,370	1.6
	Sawtimber - International ¼-inch rule (M board feet)			166,831,584	1.8
	Sawtimber - Scribner rule (M board feet)			142,549,512	1.8
	Annual mortality, 1990:				
	Growing stock (M cubic feet)	1,196		290,297	4.5
	Sawtimber - International ¼-inch rule (M board feet)			1,197,971	5.2
	Sawtimber - Scribner rule (M board feet)			1,029,310	5.4
	Net annual growth, 1990:				
	Growing stock (M cubic feet)	3,682		815,727	2.7
	Sawtimber - International ¼-inch rule (M board feet)			3,914,887	2.8
	Sawtimber - Scribner rule (M board feet)			3,510,563	2.8

<sup>1</sup>Number of field plots where attribute was greater than zero.

<sup>2</sup>Square root of attribute variance divided by attribute, times one hundred.



**Table 3**—Summary of inventory design information for the 13 sample areas that were combined for reporting Idaho's forest resources.

Organization that conducted inventory	Sample area	Median inventory date	Number of plots <sup>1</sup>	Phase two sampling			Subplots within plots	Median BAF	Phase one sampling		
				Median number of trees <sup>2</sup> (no/plot)	Median sampling intensity (ac/plot)	Median number			Number of photo points	Number of strata	Total area sampled <sup>3</sup>
FIA	Northern Idaho	1990	545	20	6,270	5	3-5	40	22,842	30	5.7
	Southwestern Idaho	1991	104	14	5,930	5	3-5	40	38,163	15	9.4
	Southeastern Idaho	1991	105	14	6,930	5	4-5	40	69,604	12	17.2
	Total FIA <sup>4</sup>		754						130,609		32.3
NFS	Idaho Panhandle	1988	275	54	9,091	9	2-53	40		2	2.5
	Cleanwater	1991	126	66	10,132	12	4-62	40		3	1.4
	Nez Perce	1991	167	55	6,877	8	2-86	40		3	1.3
	Boise	1983	695	22	1,755	5	2-20	40		34	2.2
	Caribou	1993	199	20	2,865	7	3-7	40		2	1.0
	Challis	1974	399	44	2,644	10	1-10	40		2	1.9
	Payette	1991	497	38	1,196	7	3-25	20		42	1.5
	Salmon	1989	307	26	3,148	7	2-20	40		20	1.3
	Sawtooth	1981	132	46	6,899	5	1-42	20		2	1.6
	Targhee	1991	370	34	2,341	10	5-10	40		4	1.5
	Total NFS		3,167								16.2
	Total		3,921								48.5

<sup>1</sup>Timberland field plots.

<sup>2</sup>Live trees 5.0 inches d.b.h. and larger.

<sup>3</sup>Includes all nonreserved lands, forested as well as nonforested, except a small amount of National Forest land that was not sampled.

<sup>4</sup>FIA inventoried all land outside National Forests.

**Table 4**—Area of forest land by forest type, owner group, and land class, Idaho, 1991.

Forest type	Owner group						Acres					
	National Forest		Other public		Forest industry		Private		All owners		Total	
	Reserved	Nonreserved	Reserved	Nonreserved	Reserved	Nonreserved	Reserved	Nonreserved	Reserved	Nonreserved	Reserved	Nonreserved
Douglas-fir	1,598,406	4,500,045	15,379	594,143	—	307,678	—	728,848	1,613,785	6,130,714	7,744,499	7,744,499
Western hemlock	—	136,371	—	47,134	—	86,718	—	30,189	—	300,412	300,412	300,412
Mountain hemlock	312	131,443	—	34,342	—	12,921	—	5,518	312	184,224	184,536	184,536
Ponderosa pine	571,245	909,519	7,675	102,600	—	78,137	—	381,881	578,920	1,472,137	2,051,057	2,051,057
Western white pine	2,066	91,955	—	5,967	—	12,855	—	18,938	2,066	129,715	131,781	131,781
Lodgepole pine	384,718	2,272,782	32,607	51,522	—	47,451	—	144,680	417,325	2,516,435	2,933,760	2,933,760
Western larch	10,401	125,065	—	13,647	—	18,818	—	45,986	10,401	203,516	213,917	213,917
Western redcedar	—	374,032	—	113,107	—	155,750	—	111,686	—	754,575	754,575	754,575
Limber pine	—	20,442	490	9,848	—	—	—	3,142	490	33,432	33,922	33,922
Grand fir	—	1,253,121	—	284,664	—	395,899	—	254,518	—	2,188,202	2,188,202	2,188,202
Spruce-fir	720,015	2,107,627	—	120,081	—	89,928	—	33,401	720,015	2,351,037	3,071,052	3,071,052
Engelmann spruce	—	246,285	934	36,561	—	33,068	—	5,932	934	321,846	322,780	322,780
Aspen	15,797	314,604	1,210	94,094	—	14	—	212,809	17,007	621,521	638,528	638,528
Cottonwood	6,428	—	—	29,367	—	226	—	50,800	6,428	80,393	86,821	86,821
Unclassified	446,379	325,183	—	—	—	—	—	—	446,379	325,183	771,562	771,562
Total timberland	3,755,767	12,808,474	58,295	1,537,077	—	1,239,463	—	2,028,328	3,814,062	17,613,342	21,427,404	21,427,404
Juniper	—	142,215 <sup>a</sup>	795	278,166	—	—	—	99,864	795	520,245	521,040	521,040
Pinyon-juniper	—	18,135 <sup>a</sup>	4,345	45,272	—	—	—	22,373	4,345	85,780	90,125	90,125
Western juniper	—	— <sup>a</sup>	—	116,101	—	—	—	28,026	—	144,127	144,127	144,127
Other	—	89,757 <sup>a</sup>	—	44,426	—	14	—	18,015	—	152,212	152,212	152,212
Total woodland	—	250,107 <sup>a</sup>	5,140	483,965	—	14	—	168,278	5,140	902,364	907,504	907,504
All types	3,755,767	13,058,581	63,435	2,021,042	—	1,239,477	—	2,196,606	3,819,202	18,515,706	22,334,908	22,334,908

<sup>a</sup> Area estimate from a combination of photointerpretation and field samples.

# Nonreserved Timberland Tables

## Area

**Table 5**—Area of timberland by forest type, stand-size class, and productivity class, Idaho, 1991.

Forest type and stand-size class	Productivity class							Total
	225+	165-224	120-164	85-119	50-84	20-49	0-19	
----- Acres -----								
Douglas-fir								
Sawtimber	14,002	171,252	852,914	1,515,030	1,698,580	805,945	—	5,057,723
Poletimber	—	—	5,779	47,873	156,267	101,892	—	311,810
Sapling and seedling	—	11,071	98,753	145,615	146,208	148,252	—	549,898
Nonstocked	—	—	6,317	37,948	94,352	66,278	6,387	211,282
Total	14,002	182,323	963,763	1,746,466	2,095,406	1,122,367	6,387	6,130,714
Western hemlock								
Sawtimber	—	—	56,557	107,500	40,061	—	—	204,118
Poletimber	—	—	19,552	21,172	5,730	—	—	46,455
Sapling and seedling	—	—	—	12,552	12,787	—	—	25,339
Nonstocked	—	—	—	18,183	6,317	—	—	24,500
Total	—	—	76,109	159,407	64,896	—	—	300,412
Mountain hemlock								
Sawtimber	—	—	19,224	30,641	112,697	—	—	162,562
Poletimber	—	—	—	6,348	15,314	—	—	21,662
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	19,224	36,989	128,012	—	—	184,224
Ponderosa pine								
Sawtimber	2,055	52,256	166,415	305,554	396,283	128,204	—	1,050,768
Poletimber	—	—	—	—	12,661	84,554	—	97,215
Sapling and seedling	—	—	7,786	14,903	47,836	75,589	—	146,114
Nonstocked	—	—	45,135	25,092	81,237	26,578	—	178,041
Total	2,055	52,256	219,336	345,549	538,017	314,925	—	1,472,138
Western white pine								
Sawtimber	—	—	20,792	9,091	—	—	—	29,883
Poletimber	—	—	9,091	23,916	9,091	—	—	42,099
Sapling and seedling	—	14,822	26,695	—	9,091	—	—	50,608
Nonstocked	—	—	7,125	—	—	—	—	7,125
Total	—	14,822	63,703	33,007	18,183	—	—	129,715
Lodgepole pine								
Sawtimber	—	11,968	87,285	189,372	491,743	462,336	—	1,242,704
Poletimber	—	—	6,110	133,164	248,298	634,953	13,579	1,036,104
Sapling and seedling	—	—	11,466	—	37,370	133,463	6,729	189,029
Nonstocked	—	—	—	—	23,957	24,641	—	48,598
Total	—	11,968	104,862	322,535	801,368	1,255,393	20,309	2,516,435
Western larch								
Sawtimber	—	—	20,988	133,156	—	—	—	154,143
Poletimber	—	—	5,733	28,313	9,091	—	—	43,138
Sapling and seedling	—	—	6,235	—	—	—	—	6,235
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	32,956	161,469	9,091	—	—	203,517
Western redcedar								
Sawtimber	—	51,545	210,161	247,240	96,407	10,132	—	615,486
Poletimber	—	—	11,512	24,228	13,590	—	—	49,330
Sapling and seedling	—	—	6,235	63,941	7,125	—	—	77,301
Nonstocked	—	—	—	6,223	6,235	—	—	12,458
Total	—	51,545	227,908	341,633	123,357	10,132	—	754,575
Limber pine								
Sawtimber	—	—	—	—	—	11,291	3,359	14,650
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	10,130	—	10,130
Nonstocked	—	—	—	—	—	8,652	—	8,652
Total	—	—	—	—	—	30,073	3,359	33,432
								(con.)

(con.)

Table 5 (Con.)

Forest type and stand-size class	Productivity class							Total
	225+	165-224	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----							
Grand fir								
Sawtimber	—	150,501	491,669	733,874	206,606	3,189	—	1,585,841
Poletimber	—	—	21,187	33,453	—	—	—	54,641
Sapling and seedling	—	12,904	95,572	170,025	102,345	18,583	—	399,429
Nonstocked	—	—	—	80,373	33,399	34,521	—	148,293
Total	—	163,405	608,429	1,017,726	342,351	56,293	—	2,188,203
Spruce-fir								
Sawtimber	—	—	136,272	526,494	811,089	301,228	13,397	1,788,480
Poletimber	—	—	—	29,717	106,123	113,403	—	249,243
Sapling and seedling	—	—	—	50,350	81,761	99,579	—	231,690
Nonstocked	—	—	—	13,698	33,316	34,609	—	81,623
Total	—	—	136,272	620,259	1,032,289	548,820	13,397	2,351,036
Engelmann spruce								
Sawtimber	—	2,644	48,638	151,102	54,872	35,930	—	293,186
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	267	9,354	267	—	9,889
Nonstocked	—	—	—	14,680	4,091	—	—	18,771
Total	—	2,644	48,638	166,049	68,318	36,198	—	321,846
Aspen								
Sawtimber	—	—	—	7,831	56,205	15,314	—	79,350
Poletimber	—	7,596	—	—	80,610	205,451	15,948	309,606
Sapling and seedling	—	—	—	—	33,601	130,637	35,023	199,261
Nonstocked	—	—	—	—	2,433	24,652	6,220	33,304
Total	—	7,596	—	7,831	172,849	376,054	57,190	621,520
Cottonwood								
Sawtimber	—	—	23,678	11,808	21,488	—	—	56,974
Poletimber	—	—	5,733	5,733	—	5,733	—	17,200
Sapling and seedling	—	—	—	—	—	6,220	—	6,220
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	29,411	17,541	21,488	11,953	—	80,393
Unclassified								
Sawtimber	—	—	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	2,433	9,834	31,066	281,851	325,183
Total	—	—	—	2,433	9,834	31,066	281,851	325,183
All types								
Sawtimber	16,057	440,167	2,134,592	3,968,692	3,986,032	1,773,569	16,756	12,335,865
Poletimber	—	7,596	84,699	353,918	656,776	1,145,986	29,527	2,278,503
Sapling and seedling	—	38,796	252,742	457,654	487,478	622,720	41,752	1,901,143
Nonstocked	—	—	58,577	198,629	295,170	250,998	294,457	1,097,831
Total <sup>1</sup>	16,057	486,559	2,530,610	4,978,894	5,425,457	3,793,273	382,493	17,613,343

<sup>1</sup>On this and all following tables, totals may vary due to rounding.

**Table 6**—Area of National Forest timberland by forest type, stand-size class, and productivity class, Idaho, 1991.

Forest type and stand-size class	Productivity class							Total
	225+	165-224	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----							
Douglas-fir								
Sawtimber	6,877	60,541	565,897	1,042,593	1,442,038	734,172	—	3,852,118
Poletimber	—	—	—	15,857	104,294	89,923	—	210,075
Sapling and seedling	—	—	45,324	84,913	71,640	144,610	—	346,487
Nonstocked	—	—	—	30,823	19,709	40,834	—	91,366
Total	6,877	60,541	611,221	1,174,187	1,637,680	1,009,538	—	4,500,045
Western hemlock								
Sawtimber	—	—	27,274	54,548	27,274	—	—	109,097
Poletimber	—	—	—	9,091	—	—	—	9,091
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	18,183	—	—	—	18,183
Total	—	—	27,274	81,823	27,274	—	—	136,371
Mountain hemlock								
Sawtimber	—	—	19,224	18,183	84,945	—	—	122,351
Poletimber	—	—	—	—	9,091	—	—	9,091
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	19,224	18,183	94,036	—	—	131,443
Ponderosa pine								
Sawtimber	2,055	45,790	86,916	179,676	210,889	122,201	—	647,528
Poletimber	—	—	—	—	8,847	84,554	—	93,401
Sapling and seedling	—	—	1,321	401	4,488	75,589	—	81,799
Nonstocked	—	—	38,900	—	27,548	20,343	—	86,791
Total	2,055	45,790	127,137	180,077	251,773	302,687	—	909,519
Western white pine								
Sawtimber	—	—	9,091	9,091	—	—	—	18,183
Poletimber	—	—	9,091	18,183	9,091	—	—	36,366
Sapling and seedling	—	9,091	19,224	—	9,091	—	—	37,406
Nonstocked	—	—	—	—	—	—	—	—
Total	—	9,091	37,406	27,274	18,183	—	—	91,955
Lodgepole pine								
Sawtimber	—	—	60,252	142,622	456,789	462,336	—	1,121,998
Poletimber	—	—	—	103,111	216,891	617,581	13,579	951,162
Sapling and seedling	—	—	—	—	22,922	127,145	6,729	156,797
Nonstocked	—	—	—	—	18,183	24,641	—	42,824
Total	—	—	60,252	245,733	714,785	1,231,703	20,309	2,272,782
Western larch								
Sawtimber	—	—	9,091	88,700	—	—	—	97,791
Poletimber	—	—	—	18,183	9,091	—	—	27,274
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	9,091	106,882	9,091	—	—	125,065
Western redcedar								
Sawtimber	—	20,264	140,635	138,320	54,548	10,132	—	363,900
Poletimber	—	—	—	10,132	—	—	—	10,132
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	20,264	140,635	148,452	54,548	10,132	—	374,032
Limber pine								
Sawtimber	—	—	—	—	—	11,291	3,359	14,650
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	3,359	—	3,359
Nonstocked	—	—	—	—	—	2,433	—	2,433
Total	—	—	—	—	—	17,083	3,359	20,442

(con.)

(con.)

Table 6 (Con.)

Forest type and stand-size class	Productivity class							Total
	225+	165-224	120-164	85-119	50-84	20-49	0-19	
----- Acres -----								
Grand fir								
Sawtimber	—	89,128	317,688	501,570	126,446	3,189	—	1,038,022
Poletimber	—	—	9,091	9,091	—	—	—	18,183
Sapling and seedling	—	—	10,132	35,820	38,034	10,220	—	94,207
Nonstocked	—	—	—	47,918	27,396	27,396	—	102,710
Total	—	89,128	336,912	594,399	191,876	40,806	—	1,253,121
Spruce-fir								
Sawtimber	—	—	123,440	466,552	748,521	281,301	13,397	1,633,209
Poletimber	—	—	—	16,917	93,552	105,486	—	215,956
Sapling and seedling	—	—	—	22,809	68,671	90,530	—	182,010
Nonstocked	—	—	—	13,698	33,316	29,437	—	76,451
Total	—	—	123,440	519,976	944,060	506,754	13,397	2,107,627
Engelmann spruce								
Sawtimber	—	2,644	42,415	130,306	31,487	29,543	—	236,396
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	267	9,354	267	—	9,889
Nonstocked	—	—	—	—	—	—	—	—
Total	—	2,644	42,415	130,574	40,842	29,811	—	246,285
Aspen								
Sawtimber	—	—	—	—	29,358	15,314	—	44,672
Poletimber	—	—	—	—	21,718	123,335	6,899	151,952
Sapling and seedling	—	—	—	—	17,463	69,373	20,549	107,385
Nonstocked	—	—	—	—	2,433	8,163	—	10,595
Total	—	—	—	—	70,972	216,185	27,448	314,604
Cottonwood								
Sawtimber	—	—	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—
Unclassified								
Sawtimber	—	—	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	2,433	9,834	31,066	281,851	325,183
Total	—	—	—	2,433	9,834	31,066	281,851	325,183
All types								
Sawtimber	8,932	218,368	1,401,924	2,772,161	3,212,296	1,669,478	16,756	9,299,915
Poletimber	—	—	18,183	200,566	472,577	1,020,880	20,478	1,732,684
Sapling and seedling	—	9,091	76,001	144,211	241,664	521,095	27,278	1,019,339
Nonstocked	—	—	38,900	113,055	138,418	184,312	281,851	756,536
Total	8,932	227,459	1,535,007	3,229,993	4,064,955	3,395,764	346,363	12,808,474

**Table 7**—Area of other publicly owned timberland by forest type, stand-size class, and productivity class, Idaho, 1991.

Forest type and stand-size class	Productivity class							Total
	225+	165-224	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----							
Douglas-fir								
Sawtimber	—	12,957	78,265	180,537	108,198	65,490	—	445,446
Poletimber	—	—	5,779	7,089	18,867	491	—	32,225
Sapling and seedling	—	6,687	12,728	9,600	37,482	—	—	66,498
Nonstocked	—	—	6,317	—	23,854	13,417	6,387	49,974
Total	—	19,644	103,089	197,226	188,400	79,397	6,387	594,143
Western hemlock								
Sawtimber	—	—	6,348	15,026	6,317	—	—	27,691
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	6,808	6,317	—	—	13,125
Nonstocked	—	—	—	—	6,317	—	—	6,317
Total	—	—	6,348	21,834	18,952	—	—	47,134
Mountain hemlock								
Sawtimber	—	—	—	6,714	15,057	—	—	21,771
Poletimber	—	—	—	6,348	6,223	—	—	12,571
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	—	13,062	21,280	—	—	34,342
Ponderosa pine								
Sawtimber	—	—	20,061	36,494	28,208	—	—	84,763
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	1,473	—	—	1,473
Nonstocked	—	—	491	13,418	1,964	491	—	16,364
Total	—	—	20,552	49,912	31,645	491	—	102,600
Western white pine								
Sawtimber	—	—	5,967	—	—	—	—	5,967
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	5,967	—	—	—	—	5,967
Lodgepole pine								
Sawtimber	—	491	5,967	6,687	—	—	—	13,145
Poletimber	—	—	—	491	14,196	17,372	—	32,059
Sapling and seedling	—	—	—	—	—	6,317	—	6,317
Nonstocked	—	—	—	—	—	—	—	—
Total	—	491	5,967	7,178	14,196	23,689	—	51,522
Western larch								
Sawtimber	—	—	—	6,839	—	—	—	6,839
Poletimber	—	—	—	6,317	—	—	—	6,317
Sapling and seedling	—	—	491	—	—	—	—	491
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	491	13,156	—	—	—	13,647
Western redcedar								
Sawtimber	—	23,685	12,002	37,520	6,808	—	—	80,015
Poletimber	—	—	5,779	8,363	—	—	—	14,142
Sapling and seedling	—	—	491	11,746	—	—	—	12,237
Nonstocked	—	—	—	6,223	491	—	—	6,714
Total	—	23,685	18,272	63,851	7,299	—	—	113,107
Limber pine								
Sawtimber	—	—	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	6,770	—	6,770
Nonstocked	—	—	—	—	—	3,078	—	3,078
Total	—	—	—	—	—	9,848	—	9,848

(con.)

(con.)

Table 7 (Con.)

Forest type and stand-size class	Productivity class							Total
	225+	165-224	120-164	85-119	50-84	20-49	0-19	
----- Acres -----								
Grand fir								
Sawtimber	—	28,895	80,111	64,594	24,092	—	—	197,691
Poletimber	—	—	12,096	—	—	—	—	12,096
Sapling and seedling	—	5,779	12,049	30,368	11,558	8,363	—	68,116
Nonstocked	—	—	—	6,761	—	—	—	6,761
Total	—	34,673	104,256	101,722	35,650	8,363	—	284,664
Spruce-fir								
Sawtimber	—	—	12,832	41,297	31,092	19,928	—	105,149
Poletimber	—	—	—	8,709	6,223	—	—	14,932
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	12,832	50,006	37,315	19,928	—	120,081
Engelmann spruce								
Sawtimber	—	—	6,223	—	9,272	6,387	—	21,882
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	14,680	—	—	—	14,680
Total	—	—	6,223	14,680	9,272	6,387	—	36,561
Aspen								
Sawtimber	—	—	—	—	10,166	—	—	10,166
Poletimber	—	—	—	—	7,089	39,660	—	46,749
Sapling and seedling	—	—	—	—	7,089	23,106	3,906	34,101
Nonstocked	—	—	—	—	—	—	3,078	3,078
Total	—	—	—	—	24,344	62,766	6,983	94,094
Cottonwood								
Sawtimber	—	—	14,791	5,343	6,155	—	—	26,289
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	3,078	—	3,078
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	14,791	5,343	6,155	3,078	—	29,367
Unclassified								
Sawtimber	—	—	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—
All types								
Sawtimber	—	66,027	242,567	401,051	245,366	91,804	—	1,046,815
Poletimber	—	—	23,654	37,317	52,598	57,523	—	171,091
Sapling and seedling	—	12,466	25,759	58,522	63,919	47,634	3,906	212,206
Nonstocked	—	—	6,808	41,081	32,626	16,985	9,464	106,965
Total	—	78,493	298,788	537,971	394,509	213,946	13,370	1,537,077



**Table 8—Area of forest industry owned timberland by forest type, stand-size class, and productivity class, Idaho, 1991.**

Forest type and stand-size class	Productivity class							Total
	225+	165-224	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----							
Douglas-fir								
Sawtimber	7,125	41,935	59,504	100,419	25,464	—	—	234,446
Poletimber	—	—	—	6,348	—	226	—	6,574
Sapling and seedling	—	4,384	6,183	31,391	13,259	—	—	55,216
Nonstocked	—	—	—	7,125	4,091	226	—	11,442
Total	7,125	46,319	65,686	145,282	42,814	452	—	307,678
Western hemlock								
Sawtimber	—	—	17,201	37,925	6,470	—	—	61,597
Poletimber	—	—	6,348	6,348	5,730	—	—	18,426
Sapling and seedling	—	—	—	226	6,470	—	—	6,696
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	23,549	44,499	18,670	—	—	86,718
Mountain hemlock								
Sawtimber	—	—	—	226	12,695	—	—	12,921
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	—	226	12,695	—	—	12,921
Ponderosa pine								
Sawtimber	—	—	4,384	5,528	43,878	—	—	53,791
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	8,498	9,093	—	—	17,592
Nonstocked	—	—	226	226	6,077	226	—	6,755
Total	—	—	4,610	14,253	59,048	226	—	78,137
Western white pine								
Sawtimber	—	—	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	5,730	—	—	—	—	—	5,730
Nonstocked	—	—	7,125	—	—	—	—	7,125
Total	—	5,730	7,125	—	—	—	—	12,855
Lodgepole pine								
Sawtimber	—	226	13,595	14,265	8,182	—	—	36,267
Poletimber	—	—	—	6,574	226	—	—	6,800
Sapling and seedling	—	—	—	—	4,384	—	—	4,384
Nonstocked	—	—	—	—	—	—	—	—
Total	—	226	13,595	20,838	12,792	—	—	47,451
Western larch								
Sawtimber	—	—	11,896	6,696	—	—	—	18,592
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	226	—	—	—	—	226
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	12,122	6,696	—	—	—	18,818
Western redcedar								
Sawtimber	—	—	40,054	40,193	29,533	—	—	109,779
Poletimber	—	—	—	—	7,125	—	—	7,125
Sapling and seedling	—	—	226	31,269	7,125	—	—	38,620
Nonstocked	—	—	—	—	226	—	—	226
Total	—	—	40,280	71,462	44,008	—	—	155,750
Limber pine								
Sawtimber	—	—	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—

(con.)

Table 8 (Con.)

Forest type and stand-size class	Productivity class							Total
	225+	165-224	120-164	85-119	50-84	20-49	0-19	
----- Acres -----								
Grand fir								
Sawtimber	—	24,204	51,302	105,454	25,476	—	—	206,436
Poletimber	—	—	—	12,855	—	—	—	12,855
Sapling and seedling	—	7,125	62,140	62,262	37,505	—	—	169,031
Nonstocked	—	—	—	452	—	7,125	—	7,577
Total	—	31,329	113,442	181,023	62,981	7,125	—	395,899
Spruce-fir								
Sawtimber	—	—	—	18,645	7,125	—	—	25,769
Poletimber	—	—	—	4,091	6,348	7,917	—	18,355
Sapling and seedling	—	—	—	27,541	13,089	—	—	40,631
Nonstocked	—	—	—	—	—	5,172	—	5,172
Total	—	—	—	50,277	26,562	13,089	—	89,928
Engelmann spruce								
Sawtimber	—	—	—	20,795	8,182	—	—	28,977
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	4,091	—	—	4,091
Total	—	—	—	20,795	12,272	—	—	33,068
Aspen								
Sawtimber	—	—	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	14	14
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	14	14
Cottonwood								
Sawtimber	—	—	226	—	—	—	—	226
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	226	—	—	—	—	226
Unclassified								
Sawtimber	—	—	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—
All types								
Sawtimber	7,125	66,365	198,162	350,146	167,004	—	—	788,802
Poletimber	—	—	6,348	36,215	19,429	8,143	—	70,134
Sapling and seedling	—	17,239	68,774	161,188	90,925	—	14	338,140
Nonstocked	—	—	7,351	7,803	14,484	12,749	—	42,388
Total	7,125	83,604	280,635	555,351	291,843	20,892	14	1,239,464

**Table 9**—Area of nonindustrial private timberland by forest type, stand-size class, and productivity class, Idaho, 1991.

Forest type and stand-size class	Productivity class							Total
	225+	165-224	120-164	85-119	50-84	20-49	0-19	
----- Acres -----								
Douglas-fir								
Sawtimber	—	55,819	149,249	191,481	122,879	6,284	—	525,713
Poletimber	—	—	—	18,579	33,107	11,251	—	62,937
Sapling and seedling	—	—	34,518	19,710	23,827	3,642	—	81,697
Nonstocked	—	—	—	—	46,699	11,802	—	58,501
Total	—	55,819	183,767	229,771	226,512	32,980	—	728,848
Western hemlock								
Sawtimber	—	—	5,733	—	—	—	—	5,733
Poletimber	—	—	13,205	5,733	—	—	—	18,938
Sapling and seedling	—	—	—	5,518	—	—	—	5,518
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	18,938	11,251	—	—	—	30,189
Mountain hemlock								
Sawtimber	—	—	—	5,518	—	—	—	5,518
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	—	5,518	—	—	—	5,518
Ponderosa pine								
Sawtimber	—	6,465	55,054	83,855	113,307	6,003	—	264,686
Poletimber	—	—	—	—	3,814	—	—	3,814
Sapling and seedling	—	—	6,465	6,003	32,782	—	—	45,251
Nonstocked	—	—	5,518	11,448	45,647	5,518	—	68,131
Total	—	6,465	67,038	101,307	195,550	11,521	—	381,881
Western white pine								
Sawtimber	—	—	5,733	—	—	—	—	5,733
Poletimber	—	—	—	5,733	—	—	—	5,733
Sapling and seedling	—	—	7,472	—	—	—	—	7,472
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	13,205	5,733	—	—	—	18,938
Lodgepole pine								
Sawtimber	—	11,251	7,472	25,798	26,772	—	—	71,293
Poletimber	—	—	6,110	22,988	16,984	—	—	46,083
Sapling and seedling	—	—	11,466	—	10,064	—	—	21,530
Nonstocked	—	—	—	—	5,774	—	—	5,774
Total	—	11,251	25,049	48,786	59,595	—	—	144,680
Western larch								
Sawtimber	—	—	—	30,921	—	—	—	30,921
Poletimber	—	—	5,733	3,814	—	—	—	9,547
Sapling and seedling	—	—	5,518	—	—	—	—	5,518
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	11,251	34,735	—	—	—	45,986
Western redcedar								
Sawtimber	—	7,596	17,470	31,208	5,518	—	—	61,792
Poletimber	—	—	5,733	5,733	6,465	—	—	17,932
Sapling and seedling	—	—	5,518	20,926	—	—	—	26,444
Nonstocked	—	—	—	—	5,518	—	—	5,518
Total	—	7,596	28,721	57,867	17,501	—	—	111,686
Limber pine								
Sawtimber	—	—	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	3,142	—	3,142
Total	—	—	—	—	—	3,142	—	3,142

(con.)

(con.)

Table 9 (Con.)

Forest type and stand-size class	Productivity class							Total
	225+	165-224	120-164	85-119	50-84	20-49	0-19	
----- Acres -----								
Grand fir								
Sawtimber	—	8,275	42,568	62,256	30,592	—	—	143,691
Poletimber	—	—	—	11,507	—	—	—	11,507
Sapling and seedling	—	—	11,251	41,576	15,248	—	—	68,075
Nonstocked	—	—	—	25,242	6,003	—	—	31,246
Total	—	8,275	53,819	140,581	51,843	—	—	254,518
Spruce-fir								
Sawtimber	—	—	—	—	24,351	—	—	24,351
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	9,049	—	9,049
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	—	—	24,351	9,049	—	33,401
Engelmann spruce								
Sawtimber	—	—	—	—	5,932	—	—	5,932
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	—	—	5,932	—	—	5,932
Aspen								
Sawtimber	—	—	—	7,831	16,681	—	—	24,511
Poletimber	—	7,596	—	—	51,804	42,456	9,049	110,905
Sapling and seedling	—	—	—	—	9,049	38,158	10,554	57,761
Nonstocked	—	—	—	—	—	16,489	3,142	19,631
Total	—	7,596	—	7,831	77,533	97,103	22,745	212,809
Cottonwood								
Sawtimber	—	—	8,660	6,465	15,333	—	—	30,458
Poletimber	—	—	5,733	5,733	—	5,733	—	17,200
Sapling and seedling	—	—	—	—	—	3,142	—	3,142
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	14,393	12,199	15,333	8,875	—	50,800
Unclassified								
Sawtimber	—	—	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—	—	—
Sapling and seedling	—	—	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—
All types								
Sawtimber	—	89,407	291,938	445,335	361,366	12,287	—	1,200,334
Poletimber	—	7,596	36,515	79,820	112,173	59,440	9,049	304,594
Sapling and seedling	—	—	82,208	93,733	90,970	53,991	10,554	331,457
Nonstocked	—	—	5,518	36,690	109,641	36,951	3,142	191,943
Total	—	97,004	416,180	655,579	674,150	162,670	22,745	2,028,328

**Table 10**—Area of timberland by stand volume and owner group, Idaho, 1991.

Stand volume per acre(1)	Owner group				Total
	National Forest	Other public	Forest industry	Nonindustrial private	
	Acres				
Less than 1,500 board feet	2,282,442	335,573	304,728	495,044	3,417,787
1,500 to 4,999 board feet	2,394,705	305,458	289,363	542,384	3,531,910
5,000 to 9,999 board feet	2,877,450	287,943	233,122	441,977	3,840,491
10,000 board feet or more	5,253,878	608,103	412,251	548,923	6,823,155
All classes	12,808,474	1,537,077	1,239,464	2,028,328	17,613,343

**Table 11**—Area of timberland by forest type and stocking condition, Idaho, 1991.

Forest type	Stocking condition				Mature	Nonstocked	Total
	Overstocked	Fully stocked	Medium to fully stocked	Poorly stocked			
	Acres						
Douglas-fir	176,726	673,250	1,930,358	1,445,563	1,693,534	211,282	6,130,714
Western hemlock	43,833	52,828	74,020	45,914	59,317	24,500	300,412
Mountain hemlock	6,223	34,663	39,857	6,348	97,133	—	184,224
Ponderosa pine	60,818	92,958	415,999	605,245	119,077	178,041	1,472,138
Western white pine	—	36,366	37,121	49,104	—	7,125	129,715
Lodgepole pine	382,272	703,362	789,302	300,590	292,309	48,598	2,516,435
Western larch	62,506	73,601	42,099	18,434	6,877	—	203,517
Western redcedar	131,987	176,345	218,205	92,957	122,624	12,458	754,575
Limber pine	—	—	3,359	6,770	14,650	8,652	33,432
Grand fir	213,982	488,661	732,038	312,534	292,695	148,293	2,188,203
Spruce-fir	137,764	276,887	539,490	408,128	907,143	81,623	2,351,036
Engelmann spruce	1,357	12,318	56,712	38,054	194,634	18,771	321,846
Aspen	42,341	130,856	264,027	142,398	8,595	33,304	621,520
Cottonwood	—	17,701	41,689	21,002	—	—	80,393
Unclassified	—	—	—	—	—	325,183	325,183
All types	1,259,809	2,769,797	5,184,276	3,493,040	3,808,589	1,097,831	17,613,343

**Table 12**—Number of growing-stock trees on timberland by species and diameter class, Idaho, 1991.

Species	Diameter class (inches at breast height)															Total
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
	<i>Thousand trees</i>															
Douglas-fir	351,363	201,075	158,692	124,270	101,529	75,660	58,050	41,045	28,253	18,167	12,749	7,938	5,223	3,344	6,290	1,193,649
Ponderosa pine	63,534	32,067	25,348	18,800	15,722	11,257	8,628	6,532	5,605	3,524	2,834	1,478	1,292	1,146	2,834	200,601
Western white pine	16,330	9,490	5,872	3,949	2,290	1,822	2,162	1,224	652	439	172	176	128	28	118	44,852
Lodgepole pine	420,061	220,654	217,613	169,354	91,115	45,934	17,357	6,408	1,894	671	247	61	30	8	5	1,191,413
Whitebark pine	45,478	10,376	11,332	7,859	4,732	2,089	1,376	509	274	245	156	74	8	12	20	84,540
Limber pine	6,861	1,750	1,873	1,532	852	589	440	296	112	52	52	34	54	10	17	14,522
Western larch	13,467	15,034	22,421	19,413	14,125	9,593	5,318	3,394	2,410	878	691	470	361	300	436	108,311
Grand fir	361,595	163,077	85,912	57,647	40,453	29,788	19,646	14,122	8,608	5,379	3,087	2,085	1,559	914	2,472	796,345
Subalpine fir	487,271	154,406	124,780	78,532	48,815	30,874	17,858	10,162	6,491	3,401	2,112	1,102	573	241	293	966,911
Engelmann spruce	70,560	27,685	24,332	14,499	14,461	10,869	7,495	4,780	3,903	2,732	2,088	1,771	1,137	694	1,294	188,298
Western hemlock	105,065	45,544	28,844	15,880	7,375	6,184	3,815	1,859	1,088	775	398	304	250	93	191	217,667
Mountain hemlock	20,178	9,690	11,580	8,065	4,730	4,846	3,325	2,133	1,474	1,252	795	415	409	299	323	69,514
Western redcedar	197,053	88,358	40,894	26,885	17,600	11,314	7,043	5,146	3,133	2,246	1,833	1,283	840	793	2,378	406,797
Softwood total	2,158,816	979,207	759,492	546,684	363,798	240,818	152,513	97,611	63,898	39,762	27,214	17,190	11,863	7,883	16,671	5,483,420
Aspen	230,305	57,541	55,994	28,260	12,143	3,483	1,080	304	87	60	24	—	—	—	1	389,281
Cottonwood	6,250	13,051	7,000	6,399	2,693	1,753	1,142	453	328	223	180	114	94	86	93	39,859
Hardwood total	236,555	70,592	62,994	34,659	14,836	5,236	2,222	757	415	283	204	114	94	86	94	429,140
Total	2,395,371	1,049,798	822,486	581,343	378,634	246,054	154,735	98,367	64,313	40,045	27,418	17,304	11,957	7,969	16,765	5,912,560

**Table 13**—Number of cull and salvable dead trees on timberland by owner group for softwoods and hardwoods, Idaho, 1991.

Owner group	Species group	Cull trees			Salvable	
		Rough	Rotten	Total	dead trees	Total
----- Thousand trees -----						
National Forest	Softwoods	37,217	20,039	57,256	181,486	238,743
	Hardwoods	2,857	2,095	4,952	15,089	20,042
	Total	40,075	22,135	62,210	196,575	258,785
Other public	Softwoods	1,607	1,207	2,814	14,092	16,905
	Hardwoods	1,808	929	2,737	2,575	5,312
	Total	3,415	2,136	5,551	16,666	22,217
Forest industry	Softwoods	2,815	2,297	5,112	8,108	13,221
	Hardwoods	6	—	6	—	6
	Total	2,822	2,297	5,119	8,108	13,227
Nonindustrial private	Softwoods	3,841	1,204	5,045	13,622	18,666
	Hardwoods	3,061	1,588	4,649	11,901	16,550
	Total	6,902	2,791	9,693	25,523	35,216
Total	Softwoods	45,480	24,747	70,227	217,308	287,535
	Hardwoods	7,732	4,612	12,344	29,565	41,910
	Total	53,213	29,359	82,571	246,873	329,444

**Table 14**—Net volume of growing stock on timberland by forest type and stand-size class, Idaho, 1991.

Forest type	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
----- Thousand cubic feet -----					
Douglas-fir	12,553,046	435,846	143,246	30,185	13,162,322
Western hemlock	740,904	93,895	13,123	14,664	862,586
Mountain hemlock	756,580	27,576	—	—	784,156
Ponderosa pine	2,227,464	26,293	57,130	32,554	2,343,441
Western white pine	85,541	68,223	6,461	—	160,224
Lodgepole pine	3,222,641	1,874,664	72,686	5,435	5,175,426
Western larch	608,329	96,092	1,582	—	706,003
Western redcedar	2,841,459	108,054	60,009	5,578	3,015,100
Limber pine	17,335	—	3,140	121	20,596
Grand fir	5,942,043	81,334	94,602	37,245	6,155,224
Spruce-fir	4,988,104	484,879	65,686	18,751	5,557,419
Engelmann spruce	991,867	—	74	485	992,426
Aspen	105,977	325,149	42,326	1,767	475,220
Cottonwood	112,011	38,216	—	—	150,227
All types	35,193,301	3,660,220	560,065	146,784	39,560,370

**Table 15**—Net volume of sawtimber (International 1/4-inch rule) on timberland by forest type and stand-size class, Idaho, 1991.

Forest type	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
----- Thousand board feet -----					
Douglas-fir	57,982,132	829,455	627,224	148,990	59,587,801
Western hemlock	3,374,977	129,046	54,065	80,011	3,638,099
Mountain hemlock	3,897,335	51,792	—	—	3,949,127
Ponderosa pine	13,253,162	39,073	266,499	197,125	13,755,858
Western white pine	408,453	146,929	767	—	556,149
Lodgepole pine	12,126,104	2,916,415	186,076	26,672	15,255,268
Western larch	2,690,315	154,950	—	—	2,845,265
Western redcedar	11,848,981	225,241	161,471	21,002	12,256,695
Limber pine	84,154	—	18,665	560	103,379
Grand fir	25,300,465	94,754	288,900	178,223	25,862,342
Spruce-fir	21,396,921	905,026	264,242	85,704	22,651,893
Engelmann spruce	5,106,302	—	272	—	5,106,574
Aspen	385,304	310,237	81,488	2,974	780,003
Cottonwood	453,597	29,533	—	—	483,130
All types	158,308,202	5,832,451	1,949,669	741,262	166,831,584

**Table 16**—Net volume of sawtimber (Scribner rule) on timberland by forest type and stand-size class, Idaho, 1991.

Forest type	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
----- Thousand board feet -----					
Douglas-fir	49,618,166	681,864	526,217	126,352	50,952,599
Western hemlock	2,908,999	102,698	46,351	70,584	3,128,633
Mountain hemlock	3,369,875	39,688	—	—	3,409,563
Ponderosa pine	11,313,198	28,739	216,992	166,576	11,725,505
Western white pine	349,789	118,381	683	—	468,853
Lodgepole pine	10,225,084	2,456,264	151,323	21,837	12,854,507
Western larch	2,224,302	118,812	—	—	2,343,115
Western redcedar	10,058,593	184,616	132,861	18,083	10,394,153
Limber pine	69,073	—	16,086	409	85,568
Grand fir	21,839,813	76,022	239,684	151,422	22,306,940
Spruce-fir	18,325,202	747,432	225,638	72,529	19,370,801
Engelmann spruce	4,444,318	—	240	—	4,444,558
Aspen	329,042	256,403	69,489	2,371	657,305
Cottonwood	387,610	19,802	—	—	407,412
All types	135,463,065	4,830,723	1,625,562	630,162	142,549,512

**Table 17**—Net volume of growing stock on timberland by species and owner group, Idaho, 1991.

Species	Owner group				Total
	National Forest	Other public	Forest industry	Nonindustrial private	
----- Thousand cubic feet -----					
Douglas-fir	9,443,526	1,116,191	645,829	1,201,253	12,406,799
Ponderosa pine	1,844,835	224,137	125,720	539,339	2,734,031
Western white pine	301,082	43,221	50,213	42,259	436,776
Lodgepole pine	4,934,534	186,174	110,195	298,199	5,529,103
Whitebark pine	213,032	10,519	—	6,970	230,521
Limber pine	43,873	4,964	13	5,424	54,275
Western larch	906,841	161,205	201,556	206,767	1,476,368
Grand fir	3,930,055	715,730	661,072	442,252	5,749,110
Subalpine fir	3,398,797	201,173	71,678	55,543	3,727,191
Engelmann spruce	2,202,455	149,789	111,283	24,237	2,487,764
Western hemlock	556,256	80,312	180,487	77,978	895,033
Mountain hemlock	573,679	136,342	26,751	21,002	757,774
Western redcedar	1,515,691	250,177	330,563	176,945	2,273,377
Softwood total	29,864,658	3,279,933	2,515,360	3,098,169	38,758,120
Aspen	248,849	75,065	2,996	182,826	509,736
Cottonwood	28,656	65,400	17,584	180,874	292,514
Hardwood total	277,505	140,464	20,581	363,700	802,250
Total	30,142,162	3,420,397	2,535,941	3,461,869	39,560,370



**Table 18**—Net volume of sawtimber (International ¼-inch rule) on timberland by species and owner group, Idaho, 1991.

Species	Owner group				Total
	National Forest	Other public	Forest industry	Nonindustrial private	
----- Thousand board feet -----					
Douglas-fir	44,149,261	5,012,730	2,811,335	5,116,838	57,090,163
Ponderosa pine	12,521,651	1,461,178	704,573	3,124,125	17,811,527
Western white pine	1,473,732	214,533	223,913	174,208	2,086,386
Lodgepole pine	14,547,053	689,190	338,219	1,067,582	16,642,044
Whitebark pine	817,365	53,149	—	36,536	907,050
Limber pine	200,039	25,829	—	20,230	246,098
Western larch	4,356,771	742,558	972,311	902,023	6,973,663
Grand fir	15,447,451	2,776,891	2,336,976	1,585,369	22,146,688
Subalpine fir	11,068,923	685,688	190,883	176,748	12,122,242
Engelmann spruce	11,824,377	826,127	531,342	121,108	13,302,954
Western hemlock	2,608,222	349,155	821,179	231,955	4,010,511
Mountain hemlock	2,974,493	689,789	152,193	104,916	3,921,391
Western redcedar	5,895,135	838,517	1,123,248	524,267	8,381,167
Softwood total	127,884,472	14,365,337	10,206,172	13,185,904	165,641,885
Aspen	246,555	46,958	14,246	190,122	497,881
Cottonwood	59,898	228,419	29,166	374,335	691,818
Hardwood total	306,453	275,377	43,412	564,457	1,189,700
Total	128,190,925	14,640,714	10,249,584	13,750,361	166,831,584

**Table 19**—Net volume of sawtimber (Scribner rule) on timberland by species and owner group, Idaho, 1991.

Species	Owner group				Total
	National Forest	Other public	Forest industry	Nonindustrial private	
----- Thousand board feet -----					
Douglas-fir	37,922,195	4,293,835	2,399,760	4,337,700	48,953,490
Ponderosa pine	10,821,602	1,246,769	579,642	2,596,633	15,244,647
Western white pine	1,284,595	185,316	194,167	150,176	1,814,254
Lodgepole pine	12,278,466	587,312	288,812	909,794	14,064,384
Whitebark pine	680,917	43,278	—	32,498	756,692
Limber pine	164,954	22,759	—	17,495	205,208
Western larch	3,584,008	623,027	796,154	709,313	5,712,502
Grand fir	13,443,432	2,406,025	2,004,161	1,361,287	19,214,904
Subalpine fir	9,367,203	584,081	159,660	148,995	10,259,939
Engelmann spruce	10,292,610	715,729	458,699	104,860	11,571,898
Western hemlock	2,267,426	301,362	711,897	194,593	3,475,278
Mountain hemlock	2,562,472	596,991	132,207	87,653	3,379,323
Western redcedar	4,928,448	678,784	894,437	415,524	6,917,193
Softwood total	109,598,329	12,285,268	8,619,597	11,066,519	141,569,713
Aspen	204,359	37,825	12,387	159,984	414,555
Cottonwood	48,290	196,474	19,985	300,494	565,244
Hardwood total	252,649	234,299	32,373	460,479	979,799
Total	109,850,978	12,519,567	8,651,969	11,526,998	142,549,512

Table 20—Net volume of growing stock on timberland by species and diameter class, Idaho, 1991.

Species	Diameter class (inches at breast height)													Total
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
Thousand cubic feet														
Douglas-fir	381,980	734,768	1,078,171	1,291,996	1,476,493	1,447,063	1,299,316	1,060,414	922,810	692,327	533,029	402,513	1,085,919	12,406,799
Ponderosa pine	39,790	83,923	135,945	173,927	204,237	221,890	251,975	220,739	219,881	148,195	155,126	164,156	714,246	2,734,031
Western white pine	15,971	30,456	34,228	45,128	79,336	59,723	41,298	36,212	18,456	20,496	19,036	5,362	31,072	436,776
Lodgepole pine	728,003	1,397,703	1,331,002	1,040,063	566,578	277,996	109,504	45,641	21,537	5,844	3,486	972	774	5,529,103
Whitebark pine	22,966	39,081	47,423	30,148	29,245	16,865	13,658	12,083	8,943	5,967	491	1,009	2,642	230,521
Limber pine	3,080	8,169	6,591	7,038	7,889	6,916	3,361	1,822	2,182	1,637	3,032	598	1,961	54,275
Western larch	72,263	153,618	204,713	218,111	170,301	147,329	143,157	61,103	60,070	51,136	45,649	48,571	100,348	1,476,368
Grand fir	278,730	446,482	587,040	693,167	646,749	644,474	516,660	419,324	294,946	242,542	219,186	149,302	610,508	5,749,110
Subalpine fir	478,381	540,394	547,468	532,782	450,618	348,501	291,312	189,292	144,607	88,442	52,771	24,959	37,665	3,727,191
Engelmann spruce	82,139	103,796	183,116	226,571	237,968	212,356	236,538	214,021	202,310	209,208	160,314	114,139	305,286	2,487,764
Western hemlock	60,756	96,294	91,701	126,007	122,816	80,283	66,279	62,029	42,034	36,784	37,274	17,786	54,990	895,033
Mountain hemlock	15,409	34,815	43,740	79,378	83,713	77,437	68,033	83,830	67,832	42,002	48,228	44,900	68,457	757,774
Western redcedar	151,348	181,981	204,758	203,156	174,797	181,254	137,648	125,556	122,926	105,201	80,917	91,609	512,225	2,273,377
Softwood total	2,330,817	3,851,480	4,495,894	4,667,473	4,250,740	3,722,087	3,178,739	2,532,066	2,128,534	1,649,781	1,358,541	1,065,874	3,526,094	38,758,120
Aspen	140,033	156,267	116,552	55,050	25,248	8,064	3,882	2,864	1,412	—	—	—	364	509,736
Cottonwood	39,879	59,858	40,992	34,048	30,456	15,257	12,345	10,412	11,145	8,190	7,507	7,393	15,031	292,514
Hardwood total	179,911	216,126	157,544	89,098	55,704	23,321	16,227	13,276	12,557	8,190	7,507	7,393	15,395	802,250
Total	2,510,729	4,067,606	4,653,438	4,756,571	4,306,444	3,745,408	3,194,966	2,545,342	2,141,091	1,657,971	1,366,048	1,073,268	3,541,489	39,560,370

Table 21—Net volume of sawtimber (International 1/4-inch rule) on timberland by species and diameter class, Idaho, 1991.

Species	Diameter class (inches at breast height)												Total
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
Thousand board feet													
Douglas-fir	3,711,639	5,824,850	7,164,211	7,350,616	6,821,545	5,699,280	5,060,031	3,847,509	3,011,839	2,288,593	6,310,051	57,090,163	
Ponderosa pine	448,025	824,076	1,170,322	1,405,554	1,689,381	1,538,128	1,571,232	1,085,497	1,168,474	1,281,214	5,629,622	17,811,527	
Western white pine	111,234	217,041	408,507	318,811	230,073	207,043	107,992	126,496	115,903	32,909	210,379	2,086,386	
Lodgepole pine	5,295,463	5,728,227	3,100,959	1,509,589	584,158	247,128	115,379	31,820	19,149	5,518	4,655	16,642,044	
Whitebark pine	208,685	178,159	170,373	94,662	74,653	69,366	51,867	33,404	2,970	6,041	16,872	907,050	
Limber pine	25,082	42,960	47,214	41,183	20,062	11,136	13,254	10,145	18,698	3,760	12,606	246,098	
Western larch	855,063	1,252,903	1,008,814	890,127	874,809	385,213	383,643	311,058	263,919	257,375	490,739	6,973,663	
Grand fir	1,968,445	3,126,137	3,069,237	3,103,057	2,491,439	2,001,170	1,387,583	1,104,378	959,111	625,259	2,310,871	22,146,688	
Subalpine fir	1,902,111	2,512,261	2,154,077	1,664,963	1,379,540	891,682	683,386	415,977	243,115	112,587	162,543	12,122,242	
Engelmann spruce	732,530	1,271,840	1,342,464	1,208,638	1,353,266	1,231,731	1,185,100	1,264,134	996,997	723,628	1,992,627	13,302,954	
Western hemlock	329,611	653,086	686,094	464,936	386,941	364,267	252,601	219,743	223,967	106,297	322,968	4,010,511	
Mountain hemlock	159,379	388,188	449,328	439,955	388,438	487,329	404,013	249,334	287,788	266,880	400,759	3,921,391	
Western redcedar	604,221	832,118	738,062	782,541	604,626	562,947	556,801	480,814	372,330	423,743	2,422,963	8,381,167	
Softwood total	16,351,486	22,851,846	21,509,662	19,274,631	16,898,931	13,696,420	11,772,881	9,180,308	7,684,260	6,133,804	20,287,656	165,641,885	
Aspen	-	284,682	130,549	40,761	19,369	14,016	6,778	-	-	-	1,726	497,881	
Cottonwood	-	153,424	131,839	73,775	57,516	48,574	51,381	37,332	34,119	33,612	70,247	691,818	
Hardwood total	-	438,106	262,388	114,536	76,885	62,590	58,158	37,332	34,119	33,612	71,973	1,189,700	
Total	16,351,486	23,289,952	21,772,049	19,389,166	16,975,816	13,759,010	11,831,040	9,217,640	7,718,379	6,167,416	20,359,629	166,831,584	

**Table 22**—Net volume of sawtimber (Scribner rule) on timberland by species and diameter class, Idaho, 1991.

Species	Diameter class (inches at breast height)											Total
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
	<i>Thousand board feet</i>											
Douglas-fir	2,966,116	4,608,671	5,962,498	6,273,138	5,904,026	4,978,001	4,503,427	3,424,283	2,680,536	2,036,848	5,615,946	48,953,490
Ponderosa pine	299,727	617,490	943,026	1,169,457	1,427,234	1,315,016	1,351,130	944,238	1,029,765	1,137,460	5,010,103	15,244,647
Western white pine	92,656	178,805	350,060	278,137	203,135	184,052	95,520	112,295	103,068	29,289	187,237	1,814,254
Lodgepole pine	4,450,630	4,745,843	2,653,129	1,320,209	517,745	219,724	102,687	28,320	17,043	4,911	4,143	14,064,384
Whitebark pine	167,590	140,414	141,154	81,474	65,839	61,322	46,134	29,729	2,643	5,376	15,016	756,692
Limber pine	20,499	32,931	38,484	34,538	17,190	9,688	11,658	9,021	16,634	3,346	11,219	205,208
Western larch	645,405	922,983	802,802	740,565	750,527	335,040	338,125	276,425	234,809	229,064	436,758	5,712,502
Grand fir	1,631,725	2,586,182	2,627,782	2,708,764	2,198,928	1,777,343	1,234,526	982,890	853,609	556,480	2,056,675	19,214,904
Subalpine fir	1,560,601	2,026,449	1,813,241	1,433,259	1,204,313	785,232	605,822	369,850	216,308	100,202	144,663	10,259,939
Engelmann spruce	608,528	1,041,210	1,136,526	1,041,224	1,179,100	1,080,698	1,054,739	1,125,079	887,327	644,029	1,773,438	11,571,898
Western hemlock	273,439	530,757	592,215	410,869	344,269	324,198	223,160	194,995	199,331	94,605	287,442	3,475,278
Mountain hemlock	114,654	305,310	375,552	385,350	345,119	433,723	350,856	219,465	255,095	237,524	356,675	3,379,323
Western redcedar	491,706	639,567	572,880	610,535	473,967	450,616	456,092	402,659	316,360	364,732	2,138,080	6,917,193
Softwood total	13,323,275	18,376,613	18,009,349	16,487,519	14,631,391	11,954,651	10,373,875	8,119,249	6,812,530	5,443,866	18,037,396	141,569,713
Aspen	—	230,997	111,128	35,195	17,193	12,474	6,032	—	—	—	1,537	414,555
Cottonwood	—	112,725	96,040	62,656	49,063	43,038	45,695	33,226	30,366	29,914	62,520	565,244
Hardwood total	—	343,722	207,167	97,851	66,256	55,512	51,728	33,226	30,366	29,914	64,056	979,799
Total	13,323,275	18,720,335	18,216,517	16,585,370	14,697,647	12,010,164	10,425,602	8,152,475	6,842,896	5,473,780	18,101,452	142,549,512

**Table 23**—Net volume of timber on timberland by class of timber for softwoods and hardwoods, Idaho, 1991.

Class of timber	Softwoods	Hardwoods	Total
	<i>Thousand cubic feet</i>		
Sawtimber trees	29,325,489	189,993	29,515,482
Sawlog portion	3,250,334	58,676	3,309,010
Upper-stem portion			
Total	32,575,823	248,669	32,824,492
Poletimber trees	6,182,297	553,581	6,735,878
All growing-stock trees	38,758,120	802,250	39,560,370
Rough cull trees	389,674	38,733	428,407
Rotten cull trees	233,946	8,827	242,773
Salvable dead trees	2,023,679	72,314	2,095,993
All timber	41,405,420	922,124	42,327,543

**Table 24**—Net volume of growing stock on timberland by forest type and species, Idaho, 1991

Forest type	Species															Total
	Douglas-fir	Ponderosa pine	Western white pine	Lodgepole pine	Whitebark pine	Limber pine	Western larch	Grand fir	Subalpine fir	Engelmann spruce	Western hemlock	Mountain hemlock	Western redcedar	Aspen	Cottonwood	
Thousand cubic feet																
Douglas-fir	9,480,102	719,115	98,317	563,666	32,943	30,224	368,108	849,234	437,726	192,069	31,408	16,588	253,557	76,170	33,095	13,162,322
Western hemlock	37,173	-	14,468	4,213	-	-	36,923	127,604	4,013	2,024	484,830	-	136,394	1,231	13,712	862,586
Mountain hemlock	25,042	-	3,821	11,994	-	-	8,111	5,730	88,787	15,354	-	624,611	705	-	-	784,156
Ponderosa pine	440,907	1,750,595	5,894	41,204	-	-	23,302	67,329	4,789	5,272	-	-	-	-	-	784,156
Western white pine	21,565	2,817	60,822	9,793	-	-	24,302	15,719	370	-	4,492	124	8,767	3,321	828	2,343,441
Lodgepole pine	403,646	42,829	17,122	3,951,554	41,682	1,186	133,795	100,985	314,949	115,943	8,620	1,598	19,116	14,389	7,892	160,224
Western larch	103,617	6,250	45,065	42,846	-	-	315,155	83,953	2,842	7,155	30,216	-	54,757	-	14,146	706,003
Western redcedar	340,750	17,921	65,420	34,354	-	-	151,499	677,919	18,409	48,561	178,830	-	1,404,175	15,166	62,098	3,015,100
Limber pine	2,836	-	-	-	204	13,890	-	-	784	2,882	-	-	-	-	-	20,596
Grand fir	991,453	179,647	107,923	146,134	-	-	299,313	3,648,969	74,268	247,964	111,856	6,588	325,674	2,053	13,383	6,155,224
Spruce-fir	421,089	4,297	17,091	643,819	151,560	2,990	100,768	76,898	2,703,499	1,232,935	33,662	102,322	53,267	13,221	5,557,419	992,426
Engelmann spruce	103,355	1,700	833	64,888	4,133	5,985	12,781	88,756	62,027	614,990	9,645	5,942	16,964	425	-	992,426
Aspen	51,330	-	-	14,639	-	-	-	6,015	14,728	2,614	-	-	-	375,684	10,209	475,220
Cottonwood	3,931	8,860	-	-	-	-	2,312	-	-	-	1,474	-	-	4,314	129,337	150,227
All types	12,406,799	2,734,031	436,776	5,529,103	230,521	54,275	1,476,368	5,749,110	3,727,191	2,487,764	895,033	757,774	2,273,377	509,736	292,514	39,560,370

**Table 25**—Net volume of sawtimber (International 1/4-inch rule) on timberland by forest type and species, Idaho, 1991

Forest type	Species														Total	
	Douglas-fir	Ponderosa pine	Western white pine	Lodgepole pine	Whitebark pine	Limber pine	Western larch	Grand fir	Subalpine fir	Engelmann spruce	Western hemlock	Mountain hemlock	Western redcedar	Aspen		Cottonwood
	Thousand board feet															
Douglas-fir	43 580 863	4 814 479	493 695	1 807 452	139 207	139 947	1 794 550	3 245 715	1 473 673	965 230	81 009	85 350	847 289	67 348	51 993	59 587 801
Western hemlock	152 634	—	66 868	6 854	—	—	167 308	469 653	9 951	2 264	2 225 178	—	520 082	6 481	10 825	3 638 099
Mountain hemlock	130 469	—	23 072	57 177	—	—	52 085	26 069	325 264	76 772	—	3 258 220	—	—	—	3 949 127
Ponderosa pine	1 971 754	11 151 699	31 239	197 033	—	—	106 632	250 886	18 596	24 016	—	—	—	—	4 004	13 755 858
Western white pine	97 193	19 371	225 896	26 705	—	—	107 001	45 396	—	—	14 295	372	8 567	—	11 353	556 149
Lodgepole pine	1 611 544	275 774	71 414	10 914 447	115 521	1 530	589 058	296 245	782 308	506 029	33 646	—	46 561	21 276	9 916	15 255 268
Western larch	459 726	42 388	190 685	147 402	—	—	1 348 676	323 091	27 623	105 674	—	—	168 380	—	31 620	2 845 265
Western redcedar	1 546 271	118 955	347 507	137 575	—	—	791 093	2 621 619	57 678	253 538	811 780	—	5 372 897	63 769	134 012	12 256 695
Limber pine	15 753	—	—	—	1 200	67 148	—	—	2 347	16 931	—	—	—	—	—	103 379
Grand fir	4 604 140	1 278 782	527 293	516 615	—	—	1 410 959	14 174 872	270 041	1 356 984	534 259	30 636	1 142 045	6 778	8 937	25 862 342
Spruce-fir	2 125 972	29 818	104 028	2 475 348	640 061	12 412	554 297	295 223	8 913 345	6 638 422	139 449	511 423	205 210	6 886	—	22 651 893
Engelmann spruce	520 126	10 509	4 688	283 909	11 061	25 061	68 491	383 050	217 454	3 419 918	56 783	35 392	70 133	—	—	5 106 574
Aspen	261 210	—	—	71 527	—	—	—	14 868	51 585	15 228	—	—	—	325 344	40 242	780 003
Cottonwood	12 511	69 751	—	—	—	—	3 513	—	—	—	8 438	—	—	—	388 918	483 130
All types	57 090 163	17 811 527	2 086 386	16 642 044	907 050	246 058	6 973 663	22 146 688	12 122 242	13 302 954	4 010 511	3 921 391	8 381 167	497 881	691 818	166 831 584

**Table 26-**Net volume of sawtimber (Scribner rule) on timberland by forest type and species, Idaho, 1991.

Forest type	Species										Cotton-wood	Total			
	Douglas-fir	Ponderosa pine	Western white pine	Lodgepole pine	Whitebark pine	Limber pine	Western larch	Grand fir	Subalpine fir	Engelmann spruce			Western hemlock	Mountain hemlock	Western redcedar
	Thousand board feet														
Douglas-fir	37,328,758	4,141,603	428,652	1,528,035	117,129	118,088	1,464,764	2,813,444	1,249,776	837,674	66,632	74,574	689,151	56,441	50,952,599
Western hemlock	130,935	-	58,349	5,872	-	-	139,349	406,351	8,740	1,897	1,932,576	-	431,009	5,476	3,128,633
Mountain hemlock	115,156	-	19,920	49,817	-	-	45,191	22,769	274,849	65,842	-	2,816,019	-	-	3,409,563
Ponderosa pine	1,686,821	9,503,989	26,728	166,004	-	-	84,684	217,341	16,350	20,160	-	-	-	-	11,725,505
Western white pine	84,088	16,581	195,233	22,150	-	-	85,510	39,101	-	-	12,545	331	6,503	-	468,853
Lodgepole pine	1,364,202	236,273	60,087	9,208,502	95,107	1,141	454,893	253,382	655,989	435,613	27,258	-	36,726	18,157	12,854,507
Western larch	392,223	36,084	164,676	126,576	-	-	1,071,388	278,739	-	22,974	90,029	-	133,101	-	2,343,115
Western redcedar	1,336,397	101,178	305,482	116,929	-	-	657,594	2,290,081	46,243	217,459	703,656	-	4,456,994	55,007	10,394,153
Limber pine	13,562	-	-	-	955	54,481	-	-	-	1,838	14,732	-	-	-	85,568
Grand fir	3,978,028	1,112,202	459,942	440,321	-	-	1,177,151	12,289,607	229,273	1,183,874	463,738	26,931	932,272	6,032	22,306,940
Spruce-fir	1,835,247	26,159	91,236	2,094,516	534,032	10,417	468,485	256,081	7,549,828	5,776,930	120,847	430,112	171,135	5,777	19,370,801
Engelmann spruce	452,118	8,694	3,949	245,545	9,469	21,080	60,367	335,883	183,874	2,981,385	50,537	31,355	60,301	-	4,444,558
Aspen	225,103	-	-	60,117	-	-	-	12,125	43,178	13,358	-	-	-	267,665	657,305
Cottonwood	10,851	61,885	-	-	-	-	3,127	-	-	-	7,460	-	-	324,089	407,412
All types	48,953,490	15,244,647	1,814,254	14,064,384	756,692	205,208	5,712,502	19,214,904	10,259,939	11,571,898	3,475,278	3,379,323	6,917,193	414,555	142,549,512

**Table 27**—Annual mortality of growing stock on timberland by species and owner group, Idaho, 1990.

Species	Owner group				Total
	National Forest	Other public	Forest industry	Nonindustrial private	
----- Thousand cubic feet -----					
Douglas-fir	47,219	6,829	3,669	5,490	63,206
Ponderosa pine	7,257	1,619	549	3,479	12,904
Western white pine	12,849	3,402	2,367	1,022	19,640
Lodgepole pine	39,631	1,233	1,332	2,764	44,960
Whitebark pine	1,293	—	—	—	1,293
Limber pine	147	—	—	—	147
Western larch	10,116	129	984	653	11,883
Grand fir	13,436	4,518	4,759	5,214	27,927
Subalpine fir	42,317	4,443	1,222	658	48,640
Engelmann spruce	33,680	1,829	925	—	36,434
Western hemlock	2,120	—	55	686	2,861
Mountain hemlock	2,000	—	647	—	2,647
Western redcedar	3,333	—	—	68	3,401
Softwood total	215,398	24,002	16,510	20,033	275,943
Aspen	5,274	1,668	—	6,324	13,265
Cottonwood	119	129	—	840	1,089
Hardwood total	5,393	1,797	—	7,164	14,354
Total	220,791	25,800	16,510	27,197	290,297

**Table 28**—Annual mortality of sawtimber (International 1/4-inch rule) on timberland by species and owner group, Idaho, 1990.

Species	Owner group				Total
	National Forest	Other public	Forest industry	Nonindustrial private	
----- Thousand board feet -----					
Douglas-fir	229,112	30,832	13,805	22,529	296,278
Ponderosa pine	44,678	8,213	2,136	16,491	71,517
Western white pine	64,633	18,730	9,916	2,559	95,837
Lodgepole pine	126,110	1,932	557	5,895	134,495
Whitebark pine	5,817	—	—	—	5,817
Limber pine	805	—	—	—	805
Western larch	47,118	765	2,569	669	51,121
Grand fir	54,005	16,282	17,838	17,404	105,529
Subalpine fir	144,799	18,160	4,479	1,733	169,171
Engelmann spruce	199,067	10,783	5,437	—	215,287
Western hemlock	9,180	—	—	2,903	12,082
Mountain hemlock	10,582	—	2,601	—	13,183
Western redcedar	14,331	—	—	—	14,331
Softwood total	950,237	105,697	59,336	70,183	1,185,454
Aspen	5,445	177	—	3,393	9,015
Cottonwood	—	462	—	3,039	3,502
Hardwood total	5,445	639	—	6,433	12,517
Total	955,683	106,336	59,336	76,616	1,197,971

**Table 29**—Annual mortality of sawtimber (Scribner rule) on timberland by species and owner group, Idaho, 1990.

Species	Owner group				Total
	National Forest	Other public	Forest industry	Nonindustrial private	
----- Thousand board feet -----					
Douglas-fir	199,820	26,561	11,693	18,863	256,936
Ponderosa pine	38,034	6,753	1,719	13,330	59,836
Western white pine	56,133	16,459	8,579	2,169	83,340
Lodgepole pine	106,394	1,557	496	5,106	113,552
Whitebark pine	5,036	—	—	—	5,036
Limber pine	659	—	—	—	659
Western larch	39,243	463	2,204	469	42,379
Grand fir	46,663	14,264	15,156	14,723	90,806
Subalpine fir	122,711	15,729	3,652	1,499	143,591
Engelmann spruce	174,800	9,473	4,777	—	189,050
Western hemlock	7,974	—	—	2,583	10,557
Mountain hemlock	9,180	—	2,315	—	11,495
Western redcedar	12,115	—	—	—	12,115
Softwood total	818,761	91,258	50,591	58,742	1,019,353
Aspen	4,458	134	—	2,821	7,412
Cottonwood	—	399	—	2,146	2,545
Hardwood total	4,458	533	—	4,967	9,957
Total	823,219	91,791	50,591	63,709	1,029,310

**Table 30**—Annual mortality of growing stock on timberland by species and diameter class, Idaho, 1990.

Species	Diameter class (inches at breast height)													Total
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
----- Thousand cubic feet -----														
Douglas-fir	2,780	3,597	3,522	5,600	4,885	4,271	3,902	5,423	6,471	4,119	4,968	3,337	10,330	63,206
Ponderosa pine	617	1,022	1,027	1,450	2,067	686	909	797	914	716	145	221	2,331	12,904
Western white pine	967	621	2,470	2,637	1,558	2,077	2,176	1,833	1,057	588	351	1,491	1,815	19,640
Lodgepole pine	7,802	10,569	8,161	7,545	5,617	2,647	1,497	570	119	52	45	—	336	44,960
Whitebark pine	20	243	159	70	133	65	—	—	—	107	398	63	36	1,293
Limber pine	—	—	68	—	—	—	53	—	—	26	—	—	—	147
Western larch	1,185	1,356	1,463	868	2,822	837	641	649	325	706	47	468	516	11,883
Grand fir	1,100	2,768	4,125	3,588	3,732	3,407	2,484	1,398	1,373	1,375	37	113	2,426	27,927
Subalpine fir	4,487	6,172	7,702	6,130	7,307	4,090	4,135	4,157	1,474	889	968	843	287	48,640
Engelmann spruce	82	404	687	1,185	1,882	3,675	5,616	4,270	2,457	3,102	3,543	2,295	7,236	36,434
Western hemlock	251	489	48	377	44	41	—	546	28	—	57	219	760	2,861
Mountain hemlock	—	310	56	124	329	273	342	—	141	557	151	33	330	2,647
Western redcedar	68	119	241	161	—	342	—	40	—	647	52	121	1,611	3,401
Softwood total	19,358	27,670	29,730	29,734	30,377	22,411	21,756	19,684	14,359	12,885	10,762	9,203	28,014	275,943
Aspen	5,843	3,503	2,170	965	763	21	—	—	—	—	—	—	—	13,265
Cottonwood	—	70	194	250	341	147	—	—	—	—	—	—	87	1,089
Hardwood total	5,843	3,573	2,364	1,215	1,104	168	—	—	—	—	—	—	87	14,354
Total	25,202	31,243	32,094	30,949	31,480	22,578	21,756	19,684	14,359	12,885	10,762	9,203	28,101	290,297

**Table 31**—Annual mortality of sawtimber (International ¼-inch rule) on timberland by species and diameter class, Idaho, 1990.

Species	Diameter class (inches at breast height)												Total
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand board feet -----													
Douglas-fir	11,785	25,141	23,784	21,871	20,343	29,308	35,365	22,904	27,974	18,787	59,015	296,278	
Ponderosa pine	3,286	7,319	12,057	4,299	6,082	5,542	6,474	5,238	1,102	1,734	18,383	71,517	
Western white pine	8,369	12,763	7,837	10,961	12,136	10,705	6,193	3,540	2,156	9,036	12,139	95,837	
Lodgepole pine	32,468	41,922	31,039	14,722	8,078	3,136	621	293	266	—	1,951	134,495	
Whitebark pine	761	396	785	355	—	—	—	581	2,315	381	245	5,817	
Limber pine	316	—	—	—	311	—	—	178	—	—	—	805	
Western larch	4,978	4,980	16,071	5,242	3,947	4,179	2,069	4,400	264	2,370	2,621	51,121	
Grand fir	13,406	16,446	17,555	16,382	12,172	6,532	6,637	6,456	177	524	9,241	105,529	
Subalpine fir	26,124	28,951	34,945	19,511	19,521	19,511	6,967	4,167	4,461	3,801	1,213	169,171	
Engelmann spruce	2,982	6,642	10,638	20,915	32,154	24,613	14,480	18,895	22,157	14,581	47,231	215,287	
Western hemlock	187	1,939	233	237	—	3,214	169	—	343	1,308	4,454	12,082	
Mountain hemlock	168	545	1,784	1,526	1,954	—	842	3,332	903	196	1,933	13,183	
Western redcedar	726	647	—	1,465	—	172	—	2,970	228	558	7,566	14,331	
Softwood total	105,557	147,690	156,728	117,485	116,699	106,913	79,817	72,955	62,344	53,275	165,992	1,185,454	
Aspen	XXXXX <sup>1</sup>	4,976	3,935	105	—	—	—	—	—	—	—	9,015	
Cottonwood	XXXXX	958	1,424	721	—	—	—	—	—	—	399	3,502	
Hardwood total	XXXXX	5,933	5,359	826	—	—	—	—	—	—	399	12,517	
Total	105,557	153,623	162,087	118,311	116,699	106,913	79,817	72,955	62,344	53,275	166,391	1,197,971	

<sup>1</sup>Hardwoods are not considered sawtimber until they are 11 inches d.b.h.

<sup>1</sup>Hardwoods are not considered sawtimber until they are 11 inches d.b.h.

**Table 32**—Annual mortality of sawtimber (Scribner rule) on timberland by species and diameter class, Idaho, 1990.

Species	Diameter class (inches at breast height)												Total
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand board feet -----													
Douglas-fir	9,320	20,061	19,683	18,652	17,663	25,557	31,475	20,385	24,897	16,720	52,524	256,936	
Ponderosa pine	2,038	5,664	9,822	3,557	5,131	4,718	5,553	4,510	952	1,536	16,355	59,836	
Western white pine	7,006	10,517	6,731	9,526	10,703	9,504	5,444	3,143	1,919	8,042	10,804	83,340	
Lodgepole pine	27,201	34,484	26,366	12,783	7,146	2,786	553	261	237	—	1,736	113,552	
Whitebark pine	617	328	645	312	—	—	—	517	2,061	339	218	5,036	
Limber pine	241	—	—	—	267	—	—	152	—	—	—	659	
Western larch	4,143	3,599	12,996	4,243	3,388	3,612	1,818	3,904	235	2,109	2,332	42,379	
Grand fir	10,969	13,536	14,982	14,301	10,712	5,808	5,903	5,746	158	467	8,225	90,806	
Subalpine fir	21,529	23,403	29,429	16,765	16,988	17,171	6,171	3,703	3,968	3,383	1,080	143,591	
Engelmann spruce	2,461	5,418	9,044	18,011	28,062	21,620	12,887	16,817	19,720	12,977	42,035	189,050	
Western hemlock	149	1,567	191	211	—	2,860	149	—	305	1,161	3,964	10,557	
Mountain hemlock	150	399	1,499	1,316	1,739	—	737	2,956	803	174	1,721	11,495	
Western redcedar	571	488	—	1,141	—	134	—	2,519	178	479	6,605	12,115	
Softwood total	86,395	119,464	131,389	100,817	101,800	93,770	70,690	64,611	55,431	47,387	147,598	1,019,353	
Aspen	XXXXX <sup>1</sup>	4,031	3,291	90	—	—	—	—	—	—	—	7,412	
Cottonwood	XXXXX	575	984	631	—	—	—	—	—	—	355	2,545	
Hardwood total	XXXXX	4,606	4,275	721	—	—	—	—	—	—	355	9,957	
Total	86,395	124,070	135,664	101,538	101,800	93,770	70,690	64,611	55,431	47,387	147,954	1,029,310	

<sup>1</sup>Hardwoods are not considered sawtimber until they are 11 inches d.b.h.

<sup>1</sup>Hardwoods are not considered sawtimber until they are 11 inches d.b.h.



**Table 33**—Annual mortality of growing stock on timberland by species and cause of death, Idaho, 1990.

Species	Cause of death							Logging	Total
	Insects	Disease	Fire	Animal	Weather	Suppression	Unknown		
----- Thousand cubic feet -----									
Douglas-fir	19,856	16,383	2,974	82	5,641	208	17,491	572	63,206
Ponderosa pine	7,317	1,647	724	—	798	258	2,148	11	12,904
Western white pine	1,104	6,575	—	—	584	—	11,377	—	19,640
Lodgepole pine	13,483	3,852	4,179	282	1,882	771	19,905	605	44,960
Whitebark pine	17	34	—	—	—	—	1,242	—	1,293
Limber pine	113	34	—	—	—	—	—	—	147
Western larch	915	1,812	101	—	277	161	8,616	—	11,883
Grand fir	6,441	9,312	53	181	1,139	5	10,691	105	27,927
Subalpine fir	10,509	9,738	878	53	2,146	55	25,249	12	48,640
Engelmann spruce	29,227	962	108	—	1,221	—	4,761	155	36,434
Western hemlock	—	193	41	—	191	—	2,437	—	2,861
Mountain hemlock	—	213	—	—	532	—	1,902	—	2,647
Western redcedar	—	279	156	—	81	—	2,886	—	3,401
Softwood total	88,981	51,035	9,213	599	14,492	1,458	108,705	1,460	275,943
Aspen	982	8,506	262	44	125	20	3,326	—	13,265
Cottonwood	—	486	—	146	—	—	457	—	1,089
Hardwood total	982	8,993	262	190	125	20	3,782	—	14,354
Total	89,964	60,027	9,475	788	14,617	1,478	112,487	1,460	290,297

**Table 34**—Annual mortality of sawtimber (International ¼-inch rule) on timberland by species and cause of death, Idaho, 1990.

Species	Cause of death								Total
	Insects	Disease	Fire	Animal	Weather	Suppression	Unknown	Logging	
----- Thousand board feet -----									
Douglas-fir	103,232	76,941	13,896	373	25,825	110	74,514	1,386	296,278
Ponderosa pine	41,219	9,869	4,408	—	4,275	40	11,706	—	71,517
Western white pine	5,561	30,658	—	—	1,435	—	58,182	—	95,837
Lodgepole pine	44,518	8,477	10,548	1,303	4,827	—	64,548	274	134,495
Whitebark pine	—	195	—	—	—	—	5,622	—	5,817
Limber pine	705	100	—	—	—	—	—	—	805
Western larch	4,105	7,693	628	—	949	—	37,747	—	51,121
Grand fir	28,325	32,755	34	628	3,320	—	40,396	72	105,529
Subalpine fir	39,740	37,421	2,249	—	6,656	—	83,105	—	169,171
Engelmann spruce	173,515	5,753	636	—	7,029	—	27,352	1,002	215,287
Western hemlock	—	—	237	—	—	—	11,846	—	12,082
Mountain hemlock	—	—	—	—	2,601	—	10,582	—	13,183
Western redcedar	—	1,016	732	—	207	—	12,376	—	14,331
Softwood total	440,920	210,879	33,368	2,304	57,124	150	437,976	2,734	1,185,454
Aspen	1,013	6,190	—	—	—	—	1,812	—	9,015
Cottonwood	—	1,846	—	535	—	—	1,120	—	3,502
Hardwood total	1,013	8,036	—	535	—	—	2,932	—	12,517
Total	441,934	218,915	33,368	2,839	57,124	150	440,908	2,734	1,197,971

**Table 35**—Annual mortality of sawtimber (Scribner rule) on timberland by species and cause of death, Idaho, 1990.

Species	Cause of death								Total
	Insects	Disease	Fire	Animal	Weather	Suppression	Unknown	Logging	
----- Thousand board feet -----									
Douglas-fir	90,192	66,518	12,120	298	22,523	98	63,966	1,221	256,936
Ponderosa pine	34,536	8,197	3,612	—	3,658	24	9,808	—	59,836
Western white pine	4,821	26,731	—	—	1,261	—	50,528	—	83,340
Lodgepole pine	37,804	7,178	8,944	1,069	4,043	—	54,271	244	113,552
Whitebark pine	—	152	—	—	—	—	4,885	—	5,036
Limber pine	570	89	—	—	—	—	—	—	659
Western larch	3,634	6,020	557	—	763	—	31,406	—	42,379
Grand fir	24,548	27,983	28	538	2,812	—	34,839	57	90,806
Subalpine fir	33,726	31,744	1,957	—	5,662	—	70,502	—	143,591
Engelmann spruce	152,416	5,096	562	—	6,208	—	23,877	891	189,050
Western hemlock	—	—	211	—	—	—	10,346	—	10,557
Mountain hemlock	—	—	—	—	2,315	—	9,180	—	11,495
Western redcedar	—	882	633	—	171	—	10,429	—	12,115
Softwood total	382,248	180,589	28,623	1,905	49,417	122	374,037	2,412	1,019,353
Aspen	837	5,131	—	—	—	—	1,445	—	7,412
Cottonwood	—	1,108	—	451	—	—	986	—	2,545
Hardwood total	837	6,239	—	451	—	—	2,431	—	9,957
Total	383,084	186,827	28,623	2,356	49,417	122	376,468	2,412	1,029,310

**Table 36**—Net annual growth of growing stock on timberland by species and owner group, Idaho, 1990.

Species	Owner group				Total
	National Forest	Other public	Forest industry	Nonindustrial private	
----- Thousand cubic feet -----					
Douglas-fir	166,647	25,094	17,107	41,262	250,110
Ponderosa pine	31,574	3,969	4,297	17,720	57,561
Western white pine	-2,902	-1,605	-426	1,216	-3,716
Lodgepole pine	102,974	4,142	1,458	7,577	116,151
Whitebark pine	2,562	673	-	45	3,280
Limber pine	550	78	1	106	734
Western larch	10,459	3,252	3,278	7,019	24,008
Grand fir	109,508	21,187	24,536	20,250	175,481
Subalpine fir	57,838	44	2,539	1,657	62,078
Engelmann spruce	6,215	1,366	4,347	573	12,501
Western hemlock	19,691	3,194	6,950	3,787	33,622
Mountain hemlock	10,112	2,691	-294	578	13,087
Western redcedar	33,224	6,679	10,690	7,554	58,147
Softwood total	548,451	70,765	74,484	109,344	803,043
Aspen	4,002	636	137	-104	4,671
Cottonwood	337	1,686	477	5,513	8,013
Hardwood total	4,339	2,322	614	5,409	12,684
Total	552,789	73,087	75,098	114,753	815,727

**Table 37**—Net annual growth of sawtimber (International ¼-inch rule) on timberland by species and owner group, Idaho, 1990.

Species	Owner group				Total
	National Forest	Other public	Forest industry	Nonindustrial private	
----- Thousand board feet -----					
Douglas-fir	884,650	141,073	87,759	205,571	1,319,053
Ponderosa pine	195,731	30,295	35,030	120,980	382,036
Western white pine	-22,519	-11,038	-2,454	4,930	-31,081
Lodgepole pine	469,763	14,565	14,140	27,379	525,848
Whitebark pine	8,121	1,253	-	223	9,597
Limber pine	2,769	337	-	273	3,379
Western larch	56,371	10,805	18,786	32,039	118,001
Grand fir	533,635	103,586	101,746	70,614	809,580
Subalpine fir	204,198	-1,477	931	5,073	208,724
Engelmann spruce	24,431	17,710	11,503	4,354	57,997
Western hemlock	119,702	16,115	22,992	7,461	166,269
Mountain hemlock	58,985	12,094	-620	2,985	73,445
Western redcedar	138,977	25,323	39,609	26,580	230,489
Softwood total	2,674,813	360,640	329,423	508,463	3,873,339
Aspen	10,652	10,917	596	-488	21,676
Cottonwood	795	15,066	293	3,717	19,871
Hardwood total	11,447	25,983	889	3,229	41,548
Total	2,686,261	386,623	330,312	511,692	3,914,887

**Table 38**—Net annual growth of sawtimber (Scribner rule) on timberland by species and owner group, Idaho, 1990.

Species	Owner group				Total
	National Forest	Other public	Forest industry	Nonindustrial private	
----- Thousand board feet -----					
Douglas-fir	793,002	124,770	78,750	181,794	1,178,317
Ponderosa pine	166,836	26,649	28,177	101,410	323,072
Western white pine	-17,992	-9,452	-1,757	4,685	-24,516
Lodgepole pine	429,088	13,405	12,750	24,971	480,214
Whitebark pine	7,544	1,142	-	201	8,888
Limber pine	2,555	304	-	248	3,108
Western larch	54,563	9,560	17,197	29,351	110,672
Grand fir	482,153	92,951	92,039	64,408	731,551
Subalpine fir	191,398	-655	1,261	4,607	196,609
Engelmann spruce	25,001	15,970	10,367	3,888	55,226
Western hemlock	106,832	14,853	21,092	6,953	149,731
Mountain hemlock	52,246	10,844	-537	2,616	65,170
Western redcedar	120,755	21,227	33,225	22,460	197,666
Softwood total	2,413,983	321,569	292,564	447,592	3,475,708
Aspen	8,539	8,730	546	-108	17,708
Cottonwood	646	12,796	199	3,506	17,147
Hardwood total	9,186	21,526	745	3,398	34,855
Total	2,423,169	343,095	293,308	450,991	3,510,563

**Table 39**—Net annual growth of growing stock on timberland by species and diameter class, Idaho, 1990.

Species	Diameter class (inches at breast height)													Total
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
----- Thousand cubic feet -----														
Douglas-fir	35,396	27,584	34,515	34,530	34,208	30,724	23,520	14,438	8,447	5,185	1,735	944	-1,116	250,110
Ponderosa pine	6,620	4,689	6,344	5,899	5,809	6,527	6,310	4,348	3,054	1,600	1,950	1,520	2,890	57,561
Western white pine	2,132	1,281	-1,077	-917	1,333	-210	-1,306	-1,028	-713	-218	-78	-1,407	-1,508	-3,716
Lodgepole pine	50,713	26,762	20,768	12,399	4,141	1,585	7	-3	123	-4	-24	12	-329	116,151
Whitebark pine	1,469	680	653	410	198	101	136	88	79	-60	-396	-58	-21	3,280
Limber pine	303	155	15	57	99	49	-29	12	25	-11	42	4	15	734
Western larch	4,594	4,195	4,462	4,585	1,250	2,392	1,780	318	388	-276	414	-81	-13	24,008
Grand fir	32,957	20,936	21,386	22,552	18,998	16,926	11,667	9,612	5,331	3,534	3,811	2,281	5,490	175,481
Subalpine fir	43,868	7,313	4,903	5,466	1,299	1,826	409	-1,742	-32	-157	-467	-595	-13	62,078
Engelmann spruce	8,196	3,105	4,532	4,391	2,925	461	-1,457	-1,160	77	-602	-1,938	-1,258	-4,769	12,501
Western hemlock	10,309	5,079	4,234	4,372	3,811	2,102	1,550	630	697	692	487	331	-341	33,622
Mountain hemlock	1,721	1,104	1,461	2,110	1,399	1,505	896	1,310	752	-54	331	222	222	13,087
Western redcedar	13,903	6,215	6,832	6,114	5,401	4,915	3,328	2,491	2,315	1,027	1,244	1,223	3,137	58,147
Softwood total	212,182	109,096	109,027	101,968	80,872	68,904	46,811	29,314	20,542	10,656	7,109	2,916	3,646	803,043
Aspen	3,452	786	602	40	-403	60	61	54	17	-	-	-	2	4,671
Cottonwood	3,237	1,472	842	679	184	267	208	236	309	160	158	142	120	8,013
Hardwood total	6,689	2,258	1,444	719	-219	327	269	289	326	160	158	142	122	12,684
Total	218,870	111,354	110,471	102,687	80,653	69,231	47,080	29,604	20,868	10,816	7,267	3,058	3,768	815,727

Table 40—Net annual growth of sawtimber (International 1/4-inch rule) on timberland by species and diameter class, Idaho 1990.

Species	Diameter class (inches at breast height)												Total
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
-----Thousand board feet-----													
Douglas-fir	409,995	199,677	198,280	179,924	140,094	87,764	53,829	32,975	12,717	7,146	-3,347	1,319,053	
Ponderosa pine	60,896	44,732	48,088	51,298	50,007	34,503	24,635	13,335	17,129	14,137	23,277	382,036	
Western white pine	1,708	-3,541	8,334	-162	-6,869	-5,919	-4,192	-1,294	-533	-8,514	-10,099	-31,081	
Lodgepole pine	434,578	64,681	21,418	7,334	-523	-229	625	-44	-152	69	-1,910	525,848	
Whitebark pine	7,202	2,297	1,094	564	694	472	419	-334	-2,304	-358	-149	9,597	
Limber pine	1,890	332	572	284	-172	69	149	-95	234	22	94	3,379	
Western larch	52,777	27,037	8,671	14,742	11,173	2,014	2,401	-2,041	2,127	-532	-367	118,001	
Grand fir	275,968	128,525	107,990	93,786	63,182	50,552	26,542	16,172	16,399	9,385	21,078	809,580	
Subalpine fir	166,694	31,465	9,035	10,152	2,827	-7,082	849	-402	-2,117	-2,674	-22	208,724	
Engelmann spruce	73,407	25,987	17,226	3,083	-8,025	-6,134	1,940	-1,269	-10,741	-7,273	-30,204	57,997	
Western hemlock	76,472	28,624	24,330	13,415	9,676	4,050	4,350	4,269	3,009	26	-1,951	166,269	
Mountain hemlock	16,800	13,814	9,221	9,800	5,772	8,089	4,723	-225	2,063	2,026	1,362	73,445	
Western redcedar	86,187	27,637	24,391	22,409	15,645	11,733	10,862	4,893	5,874	5,773	15,086	230,489	
Softwood total	1,664,574	591,267	478,651	406,628	283,481	179,882	127,130	65,938	43,707	19,231	12,850	3,873,339	
Aspen	XXXXX	22,945	-2,142	277	276	239	74	-	-	-	8	21,676	
Cottonwood	XXXXX	12,084	783	1,080	858	987	1,325	737	737	677	603	19,871	
Hardwood total	XXXXX	35,029	-1,359	1,357	1,133	1,226	1,399	737	737	677	611	41,548	
Total	1,664,574	626,296	477,292	407,985	284,615	181,108	128,530	66,675	44,444	19,908	13,460	3,914,887	

Table 41—Net annual growth of sawtimber (Scribner rule) on timberland by species and diameter class, Idaho, 1990.

Species	Diameter class (inches at breast height)												Total
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
-----Thousand board feet-----													
Douglas-fir	355,894	181,680	179,888	162,710	126,528	79,662	47,908	29,347	11,318	6,360	-2,979	1,178,317	
Ponderosa pine	40,323	38,222	42,833	45,178	44,040	30,390	21,727	11,849	15,203	12,579	20,728	323,072	
Western white pine	2,020	-2,095	8,036	335	-5,898	-5,185	-3,580	-1,124	-458	-7,577	-8,988	-24,516	
Lodgepole pine	389,982	63,141	21,625	7,262	-350	-189	556	-39	-135	61	-1,700	480,214	
Whitebark pine	6,519	2,138	1,076	528	623	425	378	-298	-2,051	-318	-132	8,888	
Limber pine	1,726	301	524	260	-139	63	135	-76	211	20	83	3,108	
Western larch	46,537	25,764	9,840	14,205	10,569	2,105	2,306	-1,767	1,913	-474	-327	110,672	
Grand fir	245,286	118,137	99,093	85,799	57,715	45,651	23,756	14,406	14,595	8,352	18,760	731,551	
Subalpine fir	150,560	31,526	10,555	10,202	3,328	-5,909	935	-315	-1,874	-2,380	-19	196,609	
Engelmann spruce	65,609	23,871	15,969	3,531	-6,404	-5,033	1,727	-1,130	-9,559	-6,473	-26,881	55,226	
Western hemlock	66,639	26,095	23,355	12,415	8,670	3,605	4,069	3,916	2,678	26	-1,736	149,731	
Mountain hemlock	12,664	12,406	8,682	9,514	5,304	7,199	4,534	-52	1,904	1,803	1,212	65,170	
Western redcedar	76,063	22,503	19,252	17,723	12,689	10,384	9,876	4,636	5,375	5,282	13,884	197,666	
Softwood total	1,459,823	543,686	440,729	369,661	256,675	163,166	114,326	59,355	39,120	17,260	11,906	3,475,708	
Aspen	XXXXX	18,511	-1,607	269	251	212	66	-	-	-	7	17,708	
Cottonwood	XXXXX	10,017	833	996	778	887	1,184	656	656	603	537	17,147	
Hardwood total	XXXXX	28,528	-774	1,265	1,029	1,099	1,250	656	656	603	544	34,855	
Total	1,459,823	572,214	439,955	370,926	257,704	164,266	115,576	60,010	39,776	17,863	12,449	3,510,563	

# Removals

**Table 42**—Removals of growing stock by product and owner group, Idaho, 1990.

Product	Owner group					All owners
	National Forest	Other owners			Total other owners	
		Other public	Forest industry	Nonindustrial private		
----- Million cubic feet -----						
Sawlogs	95.026	32.502	45.722	57.241	135.465	230.491
Veneer logs	6.938	4.341	12.429	0.832	17.602	24.540
Pulp & fiberwood	4.155	0.662	3.177	8.976	12.815	16.970
Posts & poles	3.606	0.013	0.000	0.180	0.193	3.799
Utility poles	0.107	0.423	0.046	0.226	0.695	0.802
House logs	0.671	0.028	0.005	0.000	0.033	0.704
Cedar products	1.369	0.815	0.581	0.215	1.611	2.980
Total products	111.872	38.784	61.960	67.670	168.414	280.286
Fuelwood	0.150	0.040	0.000	1.072	1.112	1.262
Logging residue	10.898	3.753	5.974	6.525	16.252	27.150
Total removals	122.920	42.577	67.934	75.267	185.778	308.698
----- Million board feet, International 1/4-inch rule -----						
Sawlogs	593.400	202.960	285.510	357.450	845.920	1,439.320
Veneer logs	43.320	27.110	77.620	5.200	109.930	153.250
Pulp & fiberwood	18.360	2.940	14.030	39.660	56.630	74.990
Posts & poles	0.000	0.000	0.000	0.000	0.000	0.000
Utility poles	0.670	2.640	0.290	1.410	4.340	5.010
House logs	4.190	0.180	0.030	0.000	0.210	4.400
Cedar products	8.550	5.090	3.630	1.340	10.060	18.610
Total products	668.490	240.920	381.110	405.060	1,027.090	1,695.580
Fuelwood	0.940	0.250	0.000	6.690	6.940	7.880
Logging residue	36.660	13.180	20.820	22.130	56.130	92.790
Total removals	706.090	254.350	401.930	433.880	1,090.160	1,796.250
----- Million board feet, Scribner rule -----						
Sawlogs	520.150	177.910	250.270	313.320	741.500	1,261.650
Veneer logs	37.980	23.760	68.030	4.560	96.350	134.330
Pulp & fiberwood	18.380	2.940	14.040	39.700	56.680	75.060
Posts & poles	0.000	0.000	0.000	0.000	0.000	0.000
Utility poles	0.580	2.310	0.250	1.240	3.800	4.380
House logs	3.670	0.160	0.030	0.000	0.190	3.860
Cedar products	7.500	4.460	3.180	1.180	8.820	16.320
Total products	588.260	211.540	335.800	360.000	907.340	1,495.600
Fuelwood	0.820	0.220	0.000	5.870	6.090	6.910
Logging residue	32.130	11.540	18.310	19.630	49.480	81.610
Total removals	621.210	223.300	354.110	385.500	962.910	1,584.120

**Table 43**—Removals of growing stock by species and owner group, Idaho, 1990.

Species	Owner group					All owners
	National Forest	Others owners			Total other owners	
		Other public	Forest industry	Nonindustrial private		
----- Million cubic feet -----						
Douglas-fir	29.785	8.998	11.345	17.926	38.269	68.054
Ponderosa pine	23.997	4.747	6.777	12.309	23.833	47.830
Western white pine	4.198	2.356	3.721	4.314	10.391	14.589
Lodgepole pine	15.787	2.996	5.239	9.805	18.040	33.827
Western larch	7.288	2.740	3.734	4.105	10.579	17.867
Engelmann spruce	4.073	1.114	1.833	2.146	5.093	9.166
True firs	24.985	11.864	22.208	14.141	48.213	73.198
Western hemlock	3.477	1.295	2.130	3.400	6.825	10.302
Western redcedar	9.107	6.432	10.839	6.560	23.831	32.938
Aspen	0.002	0.000	0.000	0.000	0.000	0.002
Cottonwood	0.119	0.000	0.108	0.518	0.626	0.745
Unknown	0.103	0.035	0.000	0.045	0.080	0.183
Total species	122.921	42.577	67.934	75.269	185.780	308.701
----- Million board feet, International 1/4-inch rule -----						
Douglas-fir	177.940	53.870	67.840	106.770	228.480	406.420
Ponderosa pine	142.710	28.290	40.100	72.260	140.650	283.360
Western white pine	25.090	14.060	21.940	24.890	60.890	85.980
Lodgepole pine	68.130	17.600	28.370	49.280	95.250	163.380
Western larch	43.550	16.430	22.430	24.620	63.480	107.030
Engelmann spruce	24.260	6.650	11.010	12.840	30.500	54.760
True firs	148.520	71.020	132.690	82.710	286.420	434.940
Western hemlock	20.110	7.630	12.160	18.640	38.430	58.540
Western redcedar	54.630	38.590	64.940	38.980	142.510	197.140
Aspen	0.010	0.000	0.000	0.000	0.000	0.010
Cottonwood	0.500	0.000	0.460	2.630	3.090	3.590
Unknown	0.620	0.210	0.000	0.270	0.480	1.100
Total species	706.070	254.350	401.940	433.890	1,090.180	1,796.250
----- Million board feet, Scribner rule -----						
Douglas-fir	156.210	47.270	59.550	93.870	200.690	356.900
Ponderosa pine	125.390	24.840	35.310	63.850	124.000	249.390
Western white pine	22.020	12.350	19.360	22.120	53.830	75.850
Lodgepole pine	60.590	15.510	25.800	45.740	87.050	147.640
Western larch	38.230	14.410	19.660	21.590	55.660	93.890
Engelmann spruce	21.320	5.840	9.650	11.280	26.770	48.090
True firs	130.640	62.330	116.520	73.170	252.020	382.660
Western hemlock	17.860	6.730	10.850	16.870	34.450	52.310
Western redcedar	47.900	33.840	56.970	34.290	125.100	173.000
Aspen	0.010	0.000	0.000	0.000	0.000	0.010
Cottonwood	0.500	0.000	0.460	2.460	2.920	3.420
Unknown	0.540	0.180	0.000	0.240	0.420	0.960
Total species	621.210	223.300	354.130	385.480	962.910	1,584.120





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Presents highlights of Idaho's forest resources as of 1991. Describes the extent, condition, and location of the State's forests, focusing on timberland. Includes statistical tables providing data by area, ownership, forest type, species, volume, mortality, growth, and removals for timberland.

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Keywords: timberland area, volume, mortality, growth, removals, forest inventories, double sampling, age class, stand-size class

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